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**A COMPARISON OF COMPUTER-BASED AND TEACHER-DIRECTED
INSTRUCTION ON PERFORMANCE OF THE FULL GOLF SWING**

Sarah J. Adams

**A dissertation presented to the Graduate Faculty of
Middle Tennessee State University
in partial fulfillment of the requirements
for the degree Doctor of Arts**

August, 2000

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**A COMPARISON OF COMPUTER-BASED AND TEACHER-DIRECTED
INSTRUCTION ON PERFORMANCE OF THE FULL GOLF SWING**

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ABSTRACT

A COMPARISON OF COMPUTER-BASED AND TEACHER-DIRECTED INSTRUCTION ON PERFORMANCE OF THE FULL GOLF SWING

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This study was conducted to examine differences of computer-based instruction (CBI) and teacher-directed instruction (TDI) on students' performance of the full golf swing. The sample consisted of 34 students enrolled in two PHED golf classes (CBI=19 and TDI=15). Simultaneously, during a 15-minute period the CBI group viewed the "Fundamentals of a Model Swing" software program while the investigator instructed the TDI group through a 15-minute lecture period. Both groups received the four-step modeling process designed by Hunter. A practice session followed, during which the students executed the skill, received instructor feedback and made corrections. Pretest and posttest scores were collected measuring distance and accuracy of the ball and an independent groups t-test was used to analyze the scores. Results indicated that there was no statistically significant ($p \geq .05$) difference in the CBI instructional method and the TDI instructional method when performing the skill. In conclusion, CBI using the FOMS software can be used when teaching the full golf swing in an educational setting with an instructor present.

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IN MEMORIAM

This research study is in memory of my grandfather, William A. Ruple, who inspired me on his farm in Columbia, Louisiana. He committed his life to education and helping young people develop character, determination, and self-confidence to follow their dreams. I am thankful he inspired me too.

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CHAPTER 1

INTRODUCTION

The performance of motor skills is a common characteristic among all levels of physical education classes. Previous researchers have concluded that technology enhances the performance of a motor skill (Boysen & Francis, 1982; O'Sullivan, et al., 1989; Turner, 1998). As technology has advanced, some instructors have used videotaped instruction, computer-assisted instruction, interactive video, and computer-based instruction for explaining the task and demonstrating the skill (Boysen & Francis, 1982; Steffen & Hansen, 1987).

A survey of educators was conducted by Johns Hopkins University regarding the utilization of computer technology as an instructional tool. Researchers suggested that the use of computers had a significant impact on students through the instructional methodologies employed by teachers in four areas: (a) increased student motivation, (b) increased student cooperation, (c) increased learning opportunities for high-ability students, and (d) increased opportunities for low-ability students to master basic skills (Lillie, Hannum & Stuck, 1989).

Because of inadequate educational computer software in the past, technology was used generally for evaluation of performance, grading, and record keeping. Recently, efforts have been made to utilize computers for enhancing the performance of a motor skill through visual information (Adams, 1986; Herbert & Landin, 1994). Seat and Wrisberg (1996) suggested that this visual information delivered via computers is an important contributor to the performance of these skills.

Motor learning was described by Schmidt (1982) as acquiring skilled movements through practice. According to Christina (1996), measuring the acquisition of a skilled movement must be accomplished through motor performance since motor learning cannot be observed or measured.

During motor skill performance, and individual proceeds through three progressive phases (Fitts & Posner, 1967). These phases are called the "cognitive," "associative," and "autonomous" phases. The cognitive phase encompasses the process wherein the learner acquires an understanding of the task, listens to an explanation of the task, reviews a sequential demonstration of the skill, develops a specific style of performance, and discards inappropriate movements of the motor skill.

The second phase, the associative phase, is the stage in which the performer begins to refine motor movements. The third phase, the autonomous phase, refers to the student achieving advanced levels of skill performance after extensive practice.

Professional educators agree that different instructional methods can be implemented to successfully teach a motor skill (Graham, Holt/Hale & Parker, 1998, McKenzie & Croom, 1994). Physical education teachers have typically used teacher-directed instructional methods to educate students in motor skill development during the cognitive phase. Rosenshine (1976) defined direct instruction as teacher behavior patterns in the classroom that directly correlates with student progress and success. Some behaviors of the teacher include verbally informing the students of correct skill patterns, showing the students the correct skill pattern, and directing the practice sessions of students (Graham, Holt/Hale & Parker, 1998).

The full golf swing is a motor skill that requires the coordination of several movements. Some of the essential components to be learned in order to perform an effective golf swing include the grip, set-up, backswing, downswing,

impact, and follow-through. Many golf professionals and teachers agree that each step in the swing should be successfully achieved to create consistent accuracy and distance of each ball hit (Hay, 1985; Heuler, 1996; Hogan, 1957; McLean, 1994; Mann & Griffith, 1998; Nicklaus, 1984; Price, 1997; Snead, 1975). They suggested that professional golfers differ slightly when executing the golf swing, but some common characteristics occur within each swing.

Computer-based instructional methods enhance student success by allowing additional visual imagery opportunities, detailed feedback, and demonstrations through modeling (Alessi & Trollip, 1985). The term "modeling" refers to providing visual information for the learner in the initial stages of teaching a skill (Bandura, 1977). Pollock and Lee (1992) described modeling as a process whereby a skilled individual or expert demonstrates the correct sequence of a motor skill. Some researchers suggest that modeling can be presented to the students more effectively using computers and researched-based software (Lillie, Hannum & Stuck, 1989; Alessi & Trollip, 1985).

A computer software program developed by Mann (1999) was designed to help golfers visualize the correct sequence

of a theoretically perfect golf swing by a model called "The Pro." This pro model is a mechanical three-dimensional golfer that executes the full golf swing perfectly and repeatedly. For the development of this perfect model, Mann (1999) studied more than one hundred professional golfers from the Professional Golf Association and Ladies Professional Golf Association tour. The capabilities of the software package enable the student to hear a narration of the correct swing sequence, view video clips of the pro model, and provide appropriate drills to be performed during practice.

Computer-based instruction is one form of technology that can be used to introduce and analyze "The Pro's" performance in order to discover methods of improving the full golf swing. Limited research exists, however, regarding the use of computers as an instructional tool to enhance student performance of a motor skill. Comparing motor skill performance of subjects receiving teacher-directed instruction and subjects receiving computer-based instruction using Mann's (1999) "Fundamentals of a Model Swing" software in a physical education golf class should help to bring about further understanding.

Statement Of The Problem

This study was designed to determine whether (a) beginning golfers who receive computer-based instruction using the FOMS software show greater distance and accuracy gains after a 5-week training session than beginning golfers receiving teacher-directed instruction over the same training period, and (b) intermediate golfers who receive computer-based instruction using the FOMS software show greater distance and accuracy gains after a 5-week training session than intermediate golfers receiving teacher-directed instruction over the same training period.

Significance of the Problem

Many schools today have integrated technology into the classroom and gymnasium by installing televisions, VCRs, computers, printers, scanners, projectors, software, and Internet lines. Instructors have implemented these technological tools for enhancing the lessons delivered to the students. The inclusion of technology in classroom instruction should not compromise effective teaching methods, but rather reinforce them. Large sums of money continue to be spent on the addition of current technology; therefore, more research is needed to determine the effects

of technology in the physical education classroom and gymnasium.

Research Questions

The following research questions were investigated:

1. Do beginning golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater distance gains at the end of a 5-week training session than beginning golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

2. Do beginning golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater accuracy gains at the end of a 5-week training session than beginning golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

3. Do intermediate golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater distance gains at the end of a 5-week training session than intermediate golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

4. Do intermediate golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater accuracy gains at the end of a 5-week training session than intermediate golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

Definition of Terms

For the purpose of this study, the following definitions were used:

Accuracy

Accuracy was defined as a score that is recorded as the deviation of each ball from numbers 0 to 9 on either side of the centerline.

Beginning Golfer

A beginning golfer was defined as an individual who has never received prior golf instruction and has played less than six rounds of golf.

Computer-assisted Instruction (CAI)

Computer-assisted instruction was defined as students interacting individually with the computer. This type of instruction allowed the students to view graphic simulations pertaining to the lesson. The students

answered progressive questions about the lesson to assess understanding and then more information was given based on the response via the computer.

Computer-based Instruction (CBI)

Computer-based instruction was defined as the use of a computer and software program (i.e., "Fundamentals of the Model Swing") as an instructional tool to model and explain the golf swing. The capabilities of the software package enabled the golfer to hear and read a narration of the correct swing sequence and view video clips of the pro model executing the exact swing pattern (Mann, 1999). The instructor was able to pause or repeat specific frames depending on the progress and success of the students. The swing demonstration by "The Pro" was shown repeatedly during skill practice to ensure correct practice by the students.

Distance

Distance was defined as the score of total yardage for each ball as it stopped.

Gain Score

The gain score was defined as the calculation of subtracting the pretest mean score from the posttest mean score for both distance and accuracy.

Interactive Video Instruction (IVI)

Interactive video was defined as the integration of the computer and videodisc player for allowing the students to master concepts and skills through interaction with text and graphics via the computer monitor. The students were able to navigate through the disc, setting their own pace.

Intermediate Golfer

An intermediate golfer was defined as an individual who has played six or more rounds of golf.

Modeling

Modeling was defined as a four-step method designed by Hunter (1984). The instructor provided information to the students about a skill, the students guided the instructor through skill sequence, the instructor guided the students through the skill sequence, and finally the students performed the skill independently.

Performance

Performance was defined as the distance and accuracy with which a golf ball was driven using a 5-iron golf club.

"The Pro"

"The Pro" was defined as a mechanical three-dimensional golfer designed by Mann (1999) from a research-

based study. This model was designed to allow students to view perfect golf swing demonstrations repeatedly.

Teacher-directed Instruction (TDI)

Teacher-directed instruction was defined as a seven-step process established directly by the teacher (Hunter & Russell, 1976). The steps included anticipatory set, objectives, input, modeling, checking for learning, guided practice, and independent practice.

Delimitations

The following delimitations were applied during the study:

1. The subjects were delimited to male and female college students enrolled in Middle Tennessee State University PHED golf classes.
2. The verbal instruction and feedback were delimited to the researcher, who holds a Master of Science degree in physical education, and has had three years college teaching experience.
3. The computer-based instruction was delimited to the "Fundamentals of a Model Swing" software program produced by CompuSport International (Mann, 1999).

4. The performance of the golf swing was delimited to accuracy and distance of the ball scored on the Benson Golf Test (1963), using a 5-iron.

5. The instructional unit was delimited to five weeks of classes meeting two times per week for 45 minutes. The remaining 30 minutes of class time were spent teaching other aspects of the golf game (e.g., the short game).

Limitations

The limitations of this study were as follows:

1. No attempt was made to randomly assign subjects since the subjects were selected through registration for golf classes.

2. No attempt was made to control outside instructional influences of the full golf swing, with the exception of instructing the students to keep a record of practice time outside of class.

3. No attempt was made to select which 5-iron each subject used, although the subjects were instructed to practice and test with the same 5-iron for the duration of the study.

4. No attempt was made to control verbal feedback to the subjects during the practice session.

5. Subjects not participating in the study remained in the immediate area of testing and instruction.

CHAPTER 2

REVIEW OF LITERATURE

Physical educators have utilized a variety of teaching methods to explain and demonstrate motor skills to students. In recent years, with the advancement of technology, instructors are searching for new and improved methods that will offer students more options while learning motor skills. Research in this area is critical to the task of identifying the most effective teaching methods, as well as to the enhancement of the physical educator's understanding of the learning process. This literature review includes sections on (a) technology, (b) motor learning, (c) instructional methods, (d) golf instruction, and (e) a summary.

Technology

Technology used in the educational setting is varied. As technology has improved, more options have been made available to teachers for enhancing the learning process of students. Several researchers concluded that "people retain little of what they read; more of what they read and hear; more of what they read, hear, and see graphically; and most of what they can read, hear, see graphically and

interact with" (Monti, Goodkind, Cicchetti, & Ganci, 1994, p. 66).

In view of this, physical educators have begun to utilize videotape, interactive video, computer-assisted instruction, and computer-based instruction while attempting to incorporate more advanced teaching techniques. Researchers and practitioners have long agreed that visual information is an important contributor to the performance and learning of motor skills (Seat & Wrisberg, 1996).

Research regarding videotape instruction has been limited to videotape feedback received by students once a skill has been performed. In this method, students watch a videotape replay of themselves or a model performing a specific skill prior to receiving feedback from the instructor (Mohnsen, 1997).

A study conducted by Ignico (1997) involved 27 undergraduate students in physical education. The purpose of the study was to determine the differences between teacher-directed instruction (TDI) and videotape instruction (VTI) for students preparing for teacher certification. Students in the VTI group viewed 15-minute tapes of highly skilled performers in a particular skill.

Slow motion and freeze frame portions of the videotape highlighted correct and incorrect movement patterns. In addition, the students answered relevant questions pertaining to specific performance criteria via the computer monitor. The correct segments from the videotape were circled for further feedback before the session continued. Practice in the gymnasium followed the VTI session.

The TDI group received information on the same skills without viewing the videotapes. The instructor explained the performance criteria and highlighted the correct movement patterns. Ignico found that the videotaped instruction was more effective than the teacher-directed instruction in fostering better performance and assessment of skills.

The use of computers in the educational setting today has progressed from activities such as grading, scheduling, budgeting, reporting, payroll, and storing records to utilization of computer software and its capabilities in the instructional process. Some instructors have successfully incorporated lessons into their curriculum that feature software presentation packages, replacing the overhead and slide projectors. More realistic pictures and

diagrams can be displayed with clearer demonstrations of specific details throughout the lesson (Mohnsen, 1995). Beerman (1996) suggested that abstract and complex materials can be presented to students more efficiently with computers by integrating sound, text, and visuals into the lesson. Researchers have continued to support the use of the computer as an educational tool, although few studies have been found that examine its effectiveness as an instructional tool in physical education.

Interactive video technology has been used in many different disciplines throughout the educational setting (O'Sullivan, Stroot, Tannehill, & Chou, 1989; Ignico, 1997). Floyd (1982) defined interactive video as "any video program in which the sequence and selection of messages are determined by the user's response to the material" (p. 2). Interactive video involves the integration of the computer and videodisc player. This method of instruction allows the students to master concepts and skills through interaction with text and graphics via the computer monitor (O'Sullivan, et al., 1989). Researchers have concluded that interactive video instruction is an effective tool in teaching various skills

(Adams & Waldrop, 1985; Ignico, 1997; O'Sullivan, et al., 1989; Sariscsany & Pettigrew, 1997).

Limited research has been completed concerning the use of interactive video instruction when teaching motor skills in basic physical education classes. Most of the current research in this area targets teacher education programs and preservice teachers (Chung, 1992; Kerns, 1989; Mathis, 1991; O'Sullivan, et al., 1989; Sariscsany & Pettigrew, 1997).

Many researchers have concluded that computer-assisted instruction (CAI), students using a computer alone, can teach students individually through graphic simulations (Mondell, Olszowka, Plewes, & Farhi, 1983). Computer-assisted instruction is defined by Bozeman and Hierstein (1986) as "...a curricular program wherein an interaction exists between the student and the computer for the purpose of instruction..." (p.1).

Wiksten, Patterson, Antonio, De La Cruz, & Buxton (1998) performed a study wherein computer-assisted instruction was compared to traditional lecture instruction in athletic training classes. They concluded that both methods of instruction are effective learning tools, although the traditional lecture group gained significantly

more cognitive knowledge. The researchers suggested that computer-assisted instruction should be aided by some traditional teaching methods.

Kulik, et al. (1980) conducted a meta-analysis of various CAI studies and concluded that CAI contributes a small but significant part of instruction in higher education. They suggested that CAI can enhance learning, but it should not take the place of the interaction between students and teachers.

Adams and Waldrop (1985) reported that some instructors are skeptical when asked to integrate computer-assisted instruction into their classrooms. Their skepticism is due to the expense, the complexity of the educational process, and the uncertainty of an improved quality of education. They reported that the instructor should use CAI as a supplement to the lesson rather than as a replacement for instruction.

Alessi and Trollip (1985) suggested that computer-based instruction (CBI) is a method of teaching with computers rather than using the computer solely for record keeping and assessment. They suggested that instruction is most effective through computer use when four phases occur during the lesson. The phases include: (a) presenting the

information, (b) guiding the student, (c) practicing, and (d) assessing student learning. Additionally, they concluded that the computer can be used in all these phases of the learning process (Alessi & Trollip, 1985).

Chambers and Sprecher (1983) explained that computer-based instruction supplements the lesson by illustrating concepts and presenting demonstrations, usually in short 30-minute segments. Lessons utilizing CBI for primary instruction parallel teacher-directed instruction in the classroom. Computer-based instruction should never be used as a substitute for teaching, but rather as a complement to the lesson (Lillie, Hannum, & Stuck, 1989; Alessi & Trollip, 1985).

Kulik, Bangert, and Williams (1984) conducted a meta-analysis on the effectiveness of CBI on performance in final examinations and retention examinations. The researchers concluded that CBI is better than, or just as good as, traditional teacher-directed instruction.

Nelson (1997) conducted a study on the use of a CD-ROM in teaching a nutrition class. The authors of the health education book used in the nutrition class designed the CD-ROM. The study involved 39 undergraduate students in a nutrition class. Students were divided into two groups.

Group A received lecture combined with CD-ROM and group B received traditional lecture only. Both groups were given a pretest and posttest on knowledge of nutrition learned in the class. The researcher concluded that no significant difference in student knowledge test scores occurred between the two groups, although the results leaned in favor of the CD-ROM enhanced lecture.

Limited research has been conducted using educational software as an instructional tool. Specialists have successfully developed research-based software in recent years, but the testing of these software programs appears to be insufficient.

Recently, Mann (1999) developed a research-based software program entitled "Fundamentals of a Model Swing" (FOMS). The FOMS enables golfers to learn the golf swing through narration, graphics, and video clips of a model golfer. Over one hundred golf professionals, male and female, were analyzed in a research study to establish a model golfer called "The Pro" executing a theoretically perfect swing. This pro model is a mechanical three-dimensional golfer that executes the full golf swing perfectly and repeatedly. Mann (1999) used a computer to analyze the elements of the golf swing, with each

professional golfer executing up to six swings with different clubs. As a result, "The Pro" reflects the best characteristics of the golf swing as demonstrated by the subjects, which combine to create a consistent swing with power and accuracy (Mann and Griffin, 1998).

The model can be implemented in the beginning stages of learning as an instructional tool. The software can provide students with a better understanding of the correct swing techniques, provide repeated swing demonstrations, and help students focus on relevant teaching points with color coded and highlighted features. Learning the golf swing using innovative technologies can enable students to learn more successfully. Future physical education teachers could benefit from additional research on teaching via computers.

Motor Learning

Motor skill performance is the concentration of most physical education classes. The focus of teaching motor skill performance is to help students learn the correct sequence of movements involved in executing the skill. Schmidt (1975) referred to the motor skill learning process as "motor learning." Several researchers have suggested

that motor learning is a problem-solving process (Adams, 1971; Schmidt, 1975). They suggested that the learner performs the skill, receives feedback, and then corrects the movement pattern for the next trial.

Schmidt (1982) defined motor learning as "an area of study focusing on the acquisition of skilled movements as a result of practice" (p. 20). Similarly, Magill (1993) defined motor learning as "a change in the capability of a person to perform a skill that must be inferred from a relatively permanent improvement in performance as a result of practice or experience" (p. 44). Christina (1996) stated that motor learning cannot be directly observed or measured; therefore, researchers have relied on motor performance to measure and observe the acquisition of a skill.

Fitts and Posner (1967) proposed that an individual proceeds through three phases during the performance of a motor skill. The first phase is the cognitive phase. During this phase, the learner acquires an understanding of the task, listens to the explanation of the skill, reviews a sequential demonstration of the skill, develops a specific style of performance, and discards inappropriate movements of the motor skill. The learner actively

attempts to understand the task and tries to organize appropriate responses to different situations (O'Neil, 1978).

Once the student understands how the skill should be performed, the second phase occurs. This phase is called the associative phase, which is the stage when the performer begins to refine motor movements. Limited change occurs during this stage, and any recognition of errors is self-directed (Fitts & Posner, 1967).

O'Neil (1978) suggested that many decisions must be made during the associative phase by both the learner and the instructor. Examples of these decisions include whether to emphasize speed or accuracy of the task, whole or part learning methods (i.e., teaching the skill in partial segments leading up to the complete skill performance or teaching the complete skill at the beginning of the lesson and then breaking down the parts of the skill), learning through guidance or trial and error, and determining the amount of practice with the instructor's feedback to the student (O'Neil, 1978).

The third phase, the autonomous phase, refers to the student achieving advanced levels of skill performance after extensive practice (Schmidt, 1975). The learner has

approached a level of task mastery and is able to perform the skill with apparent ease. Once acquiring task mastery of one particular skill, the student is able to learn various other skills involved in the activity (O'Neil, 1978). Schmidt (1975) suggested that gradual changes in performance carry the learner from one stage to the next.

Dauer and Pangrazi (1986) applied different terms to the above phases: introductory, practice, and consolidation. During the introductory phase, the teacher verbalizes the skill so that the students can understand the task to be performed. The information is often relayed to students in sequential steps or demonstrated in slow motion. The researchers also suggested that loop films, videotaping, diagrams, or others kinds of visual aids can help students develop a clear understanding of the skill at hand. Teaching the correct patterns of movement during this early phase prevents the students from having to relearn the skill after developing improper techniques.

During the practice phase, the individual receives feedback, eliminates errors, and continues to refine the skill pattern. The attention of the student begins to shift from the process of the skill to the product.

Practice must consist of repeated trials, and the teacher

must offer correct information when giving feedback. Other factors that ensure the students receive maximum benefits during this phase include working in small groups, revisiting the skill in different situations, shorter practice sessions, extending the unit over long periods of time, mental practice, and observation of the skill movement (Dauer & Pangrazi, 1986).

Researchers have concluded that other variables must be addressed during the practice phase to ensure optimal learning (Peddie, 1995; Wrisberg & Liu, 1991). These variables include the type of information provided to the learner, the frequency with which information is provided to the learner, the level of feedback, the organization of practice sessions, and the duration of practice with rest distribution (Dauer & Pangrazi, 1986; Kernodle & Turner, 1998; Peddie, 1995; Wrisberg & Liu, 1991).

The consolidation phase is achieved when the student can perform the skill with ease and little stress. Students who have higher skill levels or older students usually achieve this stage (Dauer & Pangrazi, 1986).

The information provided to the learner in the initial acquisition of a motor skill can be labeled "modeling."

Generally, modeling refers to the instructor's demonstration of the correct technique of a motor skill. Pollack and Lee (1992) described modeling as a demonstration of the optimal characteristics of a motor skill by a skilled model or expert. Sheffield (1961) suggested that the learner needs a visual image of the motor skill to be stored in his or her memory for comparing and correcting various trials. Instructors can apply various methods of instruction (i.e., videotaped instruction, interactive videodisc, computer-assisted instruction and computer-based instruction) to present the modeling of expert performance of a skill.

Poulton (1957) suggested that skills be classified into two types of movement, open and closed. He defined open skills as those that are performed in an unpredictable or changing environment. Some examples include the tennis forehand, basketball lay-up, and hitting a baseball. Poulton's (1957) definition of a closed skill is a task performed in a controlled environment. The practice of these skills can be performed in a stationary position. Examples include the tennis serve, volleyball serve, and basketball free throw. Some closed skills, even though they are performed in a controlled environment, are subject

to a variety of conditions. The full golf swing, for example, requires the individual to perform the same swing but with different variables, such as with various club lengths, distances from the hole, and surfaces (Rink, 1993; Schmidt, 1982).

Instructional Methods

Hunter (1982) defined teaching as "a constant stream of professional decisions made before, during and after interaction with the student: decisions which, when implemented, increase the probability of learning" (p. 3). Included in these decisions is the selection of instructional methods to be used in the classroom. Researchers have agreed that instructors employing effective teaching methods increase student motivation, performance, and self-assurance (Graham, Holt/Hale & Parker, 1998; Manross & Templeton; Housner & Griffey, 1985; Hunter, 1984).

Researchers have concluded that effective teachers display common characteristics in the classroom (Hunter, 1982; Rosenshine, 1976; Rink, 1993; Graham, Holt/Hale & Parker, 1998; Manross & Templeton, 1997). Some of these characteristics include excellent classroom management

skills, designing well-constructed lesson plans, assessing student behavior and performance, providing quality feedback during practice sessions, and quality communication skills (Hunter, 1982; Graham, Holt/Hale & Parker, 1998; Rink, 1993).

Dodd (1994) defined an expert or effective teacher as "a global construct that refers to the ease with which teachers perform their work to maximize student learning" (p. 156). Manross and Templeton (1997) suggested that expert teachers have extensive knowledge of the subject matter in addition to superior teaching skills.

Griffey and Housner (1991) conducted research and ascertained that lessons of experienced teachers include more pacing events, monitoring of learning, and structuring. Housner and Griffey (1985) analyzed the differences in planning and interactive decision making between experienced and inexperienced teachers. They discovered that, when planning, experienced teachers focus more on individual student performance and incorporating various teaching strategies during the lesson.

Glaser (1962) found that the degree of learning by the students directly correlates with effective instructional models used in the classroom. The researcher suggested

that this instructional model be divided into four main parts: (a) establishing instructional objectives, (b) determining entering behavior, (c) implementing instructional procedures, and (d) evaluating performance. This model provides instructors with a clear organizational framework of the instructional process.

Direct instruction has been commonly used in physical education classes (Dauer & Pangrazi, 1986; Graham, Holt/Hale & Parker, 1998; Rink, 1993). Rosenshine (1976) defined direct instruction as patterns of teacher behaviors that are directly related to enhanced academic performance of students. Direct instruction requires the teacher to inform the students of correct skill patterns, show the students how to perform the skill, and direct the practice sessions of students (Graham, Holt/Hale & Parker, 1998; Rink, 1993).

Within the framework of direct instruction, well-designed lesson plans by the instructor are imperative for effective teaching (Russell & Hunter, 1976; Graham, Holt/Hale & Parker, 1998; Rink, 1993). Russell and Hunter (1976) suggested that seven elements should be considered when designing an effective lesson plan. These elements include anticipatory set, instructional objectives, input,

modeling, checking for learning, guided practice, and independent practice. Additionally they suggested that, when designing lesson plans, all elements are not mandatory but optional.

Hunter (1982) has described each of the seven elements of a well-designed lesson. The anticipatory set is offered at the start of the lesson and allows the teacher to interest the students and prepare them to learn the subject matter through relevant images, statements, or questions. The students should actively be involved in the set, creating a desire to learn.

Instructional objectives are described as the form of behavior that the instruction should produce. These objectives are stated in terms of what the students will do to validate the learning of the material (e.g., describe, discuss, solve, manipulate and perform).

Input of the lesson is the actual instructional material delivered to the students. During instructional input, the teacher introduces new information, tasks, problems, and procedures that should be sequenced and well organized, offering explicit information regarding the topic. The teacher may incorporate several methods of delivery during this stage including instruction from a

book, film, diagram, real objects, records, computer software, or a combination of these.

Modeling is providing an example of the skill or concept previously delivered during the input. Often, students hear an explanation of the skill but have difficulty processing the information. A model can be an imitation of the desired outcome such as the golf swing, or it may be concrete material such as a layout of a golf course.

Hunter (1984) suggested that the modeling process has four components that should be assimilated into the instructional process for further understanding of the skill. The components are: the teacher explains and demonstrates the skill, the students guide the teacher through the execution of the skill, the students perform the skill with the teacher's guidance, and finally the students execute the skill independently. Short phrases were created for teachers to quickly identify and remember the four components: (a) "I'll do it," (b) "you help me," (c) "I'll help you," and (d) "you do it" (Hunter, 1984). The four components involve the teacher and student working together to achieve a desired outcome.

The teacher should continually check for evidence of learning as the students perform the skill. If a lack of understanding persists, the teacher must review previous instruction for optimal success of all students. Guided practice allows the instructor to provide corrective feedback to the students. Ample independent practice should be provided during the lesson for optimal learning and success of the students (Hunter, 1982).

Clark (1986) suggested that learning achievements come from sound instructional teaching methods and practice rather than from the tools with which the instructor delivers the content. Additionally, the researcher suggested that instructors should strive to create well-developed lessons that provide students with opportunities for high levels of success.

Golf Instruction

The proper golf swing is generally accepted as a very difficult skill to develop, and most golfers find the game to be one of the most intriguing sports ever invented. Beginning golfers often try to emulate professional golfers, but the search for a perfect swing can be frustrating, frequently leading the beginner to

dissatisfaction. Until recently, most literature regarding the golf swing consisted of personal opinion by professional players and teachers (i.e., Harmon, Hogan, Ledbetter, Lopez, McLean, Nicklaus, Palmer, Price, Snead, Trevino, and Woods).

According to the Professional Golf Association Teaching Manual (1990), there are two phases involved in the full golf swing: pre-swing (i.e., grip, aim, and set-up) and the in-swing (i.e., actual swing). Many golf professionals and teachers agree that each step in the swing should be successfully achieved to create consistent accuracy and distance of the ball (Hay, 1985; Heuler, 1996; Hogan, 1957; McLean, 1994; Mann & Griffith, 1998; Nicklaus, 1984; Price, 1997; Snead, 1975). Although most professional golfers differ slightly when executing the golf swing, some common characteristics occur in each individual swing.

Mann (1999) suggested eight sequential steps that should be addressed when learning the golf swing. These steps include the grip, setup, backswing, transition, top position, downswing, impact, and follow-through. Each step should be performed correctly for the golfer to swing the club effectively and consistently. All golfers are unique

in stature, athleticism, and mental preparedness; therefore, each individual may perform each step slightly differently.

The fundamentals of the golf swing should continually be reviewed, practiced, and analyzed for optimal success in lowering scores.

Summary

Using technology to introduce the sequential requirements of a motor skill in the educational setting has become more prevalent. Recognizing that not all educators have gained expert knowledge and organizational skills necessary to teach a specific motor skill (e.g., full golf swing), students are sometimes denied thorough instruction. Therefore, technology could provide additional guidance and demonstration for the students. Additionally, researchers have concluded that students can learn effectively by receiving computer-based instruction along with teacher-directed instruction.

The purpose of this study was to examine whether the use of technology, such as computer-based instruction with a research-based software program (i.e., "Fundamentals of a Model Swing"), enhances learning of a motor skill. Limited

research has been conducted thus far utilizing instructional software when teaching the full golf swing. More research in this area would benefit physical educators in their efforts to teach motor skills more effectively.

CHAPTER 3

METHODS

Design

This study was designed to determine whether (a) beginning golfers who receive computer-based instruction using the FOMS software show greater distance and accuracy gains after a 5-week training session than beginning golfers receiving teacher-directed instruction over the same training period, and (b) intermediate golfers who receive computer-based instruction using the FOMS software show greater distance and accuracy gains after a 5-week training session than intermediate golfers receiving teacher-directed instruction over the same training period.

The study included the following procedural steps: (1) selection of subjects, (2) selection of an instrument, (3) development of the procedures, and (4) treatment of data.

Subjects

The target population consisted of students enrolled in beginning golf classes at the college level. The experimentally accessible population (EAP) consisted of all beginning golf classes at Middle Tennessee State University

(MTSU). Two classes were selected with similar time constraints. The first class was designated as the teacher-directed instruction (TDI) group and the second class was designated as the computer-based instruction (CBI) group. The groups were assigned prior to the first class meeting. Both groups were unaware of the differences in instructional methods for each class. The classes met during the spring session, and the study continued for five weeks. Each class met two days a week, on Tuesday and Thursday, for 75 minutes. A sample size of 20 students per class was expected for the study. Middle Tennessee State University's Institutional Review Board (see Appendix A) approved all procedures before the study began. Dr. Ralph Mann granted permission (see Appendix D) for the use of the "Fundamentals of a Model Swing" version 2.0 software.

Prior to the study, all students enrolled in the golf classes were invited to participate (see Appendix B). All students interested in taking part in the experiment were asked to sign an informed consent form (see Appendix C) explaining the testing protocol and any possible risk involved. The consent form included a summary of the study and an explanation that subjects may terminate participation at any time during the 5-week period. Extra

credit points were given to all students participating in the study. Students not involved in the study were given alternative opportunities to earn extra credit points throughout the semester.

Instrument

The Benson Golf Test (1963) was used to measure performance of the subjects using a 5-iron golf club during the pretest and posttest skills assessment. This test was designed to measure full golf swing performance by subjects in terms of distance and accuracy of each ball. The reliability coefficients by odd-even correlations corrected by application of the Spearman-Brown formula were .90 for the distance score and .70 for the deviation score. The multiple correlation between actual golf scores and the distance and deviation scores was .94. Benson designed this test for high school students, but recent validity evidence among college students was found (White, 1990).

The testing area was approximately 150 yards by 100 yards (see Appendix H). Distance was measured by placing markers in a straight line 25 yards apart starting from the hitting line and continuing to a 150-yard marker. Accuracy was measured by placing nine deviation signs (numbered 1

through 9) on the 150-yard marker every 5 yards on each side of center. Small flags were placed down each 25-yard line marking the deviations. This procedure aided the scorers only.

The equipment needed for testing was a 5-iron golf club and 25 golf balls. Materials required for data collection were measuring devices and marking materials. Scoring equipment included score sheets and pencils. The equipment needed for the computer-based instruction group was the FOMS computer software, a laptop computer, speakers, and a large screen LCD projector.

Procedures

The Benson Golf Test (1963) was administered to all subjects from the TDI and CBI groups on the first day of the study for assessing pretest scores among the subjects. Subjects were given instructions prior to the test. The instructions were as follows: (a) the subject must try to hit the ball as far and accurately as possible, (b) the subject must stand behind the hitting line, (c) the same club must be used throughout the study, (d) five practice balls are permitted before scoring begins, (e) the balls should be hit simultaneously with others taking the test,

(f) the balls are scored after all subjects have finished hitting all balls, and (g) the final score consists of the average score of twenty balls measuring distance and accuracy.

Students' were assigned to one of four designated testing stations marked by colored cones (i.e., red, blue, black, green). All subjects hit balls simultaneously and scoring began after all students had completed twenty trials. The students were tested at the same testing station for the pretest and posttest.

Eight people were chosen to assist the investigator with data collection. One person supervised the sign-in table, instructing the students to select a club and move to the practice area. One person assisted the students by directing them to the appropriate testing area, giving clear instructions of the testing procedures. The students were asked to use the same club throughout the study including the pretest and posttest.

Three groups of two scorers were used at the testing station. One person from each group measured the distance of the ball with a measuring device, while the second person checked the deviation and recorded the score of each ball on the score sheet (see Appendix I). The investigator

administering the test stayed 3 yards behind the hitters and in line with the 150-yard marker.

The scorers recorded two numbers for each ball. The first number was the distance the ball traveled and the second was the deviation from the intended line of flight. The final score was determined by averaging the 20 scores on distance and accuracy, resulting in two separate scores. No added swings were allowed for students who failed to contact the ball resulting in a "no-score" for that particular ball. The investigator who holds a Master of Science degree in Physical Education and has had three years of college teaching experience served as the instructor for both groups. The investigator administered the pretest, posttest, and collected data for both groups.

A direct style of teaching was used for the CBI (see Appendix E) and TDI (see Appendix F) groups that included the following: (a) a short lecture about a specific skill in the full golf swing; (b) a demonstration of the skill; (c) practice sessions; and (d) an opportunity to correct errors. The subjects were given a series of progressive skills that were performed in drill format. The progression for teaching the golf swing was as follows: (a) grip, (b) setup, (c) backswing, (d) transition, (e) top

position, (g) downswing, (h) impact, and (i) follow-through.

All subjects from both groups were asked to keep a log of additional practice sessions outside of class. The log listed the amount of practice time per session, the approximate number of balls hit, and the date. The practice log of each student was submitted to the investigator on the day of the posttest.

Each class meeting during the study, all subjects in the TDI group were given approximately 15 minutes of verbal instruction and demonstration at the beginning of the lesson in a group setting, followed by Hunter's modeling process. A 20-minute practice session was conducted which included verbal feedback when appropriate. The drills to be practiced were demonstrated during the verbal instruction time.

A summary of the lesson was given to all subjects during a five-minute session at the end of the lesson. The remaining 30 minutes of class was used to improve the short game. The TDI group continued with this lesson routine throughout the study.

The CBI group received approximately 15 minutes of instruction which included the following: (a) a short

lecture about a specific skill using the FOMS software; (b) a demonstration of the skill with the FOMS software; (c) practice sessions; and (d) an opportunity to correct errors. The instructor projected the software images via a large screen LCD projector for the students to view. The instructor advanced the screens when prompted by the narrator on the FOMS software. The progressive skills explained in the teacher-directed instruction section were explained and discussed in the FOMS software for the CBI group. This group also received Hunter's modeling process following the instruction time. All drills were explained and demonstrated during the lecture time. A 20-minute practice session followed the drill practice with instruction and feedback given during that time when appropriate. The remaining 5-minute period was used for questions, discussion, and a conclusion of the lesson. The extra 30 minutes was used for improvement of other aspects of the golf game.

The Benson Golf Test (1963) was administered to the TDI group and CBI group on the last day of the study for analyzing posttest scores among the subjects. The same data collection procedures were used as in the pretest.

The gain scores for distance and accuracy were used to determine the amount of improvement for each group.

Statistical Analysis

Statistical analysis for this study was conducted using the SPSS statistical analysis program, version 9.0. The mean gain scores of ball distance for the beginning TDI group and CBI group were compared using an independent groups t-test. The mean gain scores of ball accuracy for the beginning TDI group and CBI group were compared using an independent groups t-test. The mean gain scores of ball distance for the intermediate TDI group and CBI group were compared using an independent groups t-test. The mean gain scores of ball accuracy for the intermediate TDI group and CBI group were compared using an independent groups t-test.

CHAPTER 4

RESULTS

The purpose of this research was to compare computer-based instruction and teacher-directed instruction on the performance of the full golf swing of college students. This chapter includes the descriptive data for each research question.

Two golf classes were selected consisting of 38 potential subjects. The students in the groups were not randomly assigned; rather, all who registered for the classes were asked to participate. One class was assigned to the teacher-directed instructional group (n=20) and the other class was designated as the computer-based instructional group (n=18). The subjects were reduced through subject mortality to 34 students (TDI=19 and CBI=15). The reduction in the subject pool was due to students' failure to attend both testing dates and an injury unrelated to the study. All four students not participating in the study were involved in the daily activities, but not tested.

The gain scores for distance and accuracy were calculated to determine the degree of change for each group.

Research Questions

Research Question One

Do beginning golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater distance gains at the end of a 5-week training session than beginning golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

The pretest, posttest, and gain score mean distances obtained by the beginning golfers in the TDI and CBI groups are presented in Table 1. The TDI group gained .29 yards while the CBI group gained 15.53 yards. An independent groups t-test was conducted to determine whether a statistically significant difference existed between the two treatment groups. There was no statistically significant, $t(13) = -1.28$, $p = .22$, effect size = .67 difference, in distance gained between beginning golfers receiving computer-based instruction using the "Fundamentals of a Model Swing" software and beginning golfers receiving teacher-directed instruction.

Table 1**Distance Scores for Beginning Golfers (n=15)**

	Teacher-directed		Computer-based	
	(n=8)		(n=7)	
	Mean	SD	Mean	SD
Pretest	77.33	17.93	65.43	16.11
Posttest	77.62	12.46	80.97	20.62
Distance Gained	.29	20.96	15.53	25.28

Research Question Two

Do beginning golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater accuracy gains at the end of a 5-week training session than beginning golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

The pretest, posttest, and gain score means for accuracy obtained by the beginning golfers in the TDI and CBI groups are presented in Table 2. The TDI group improved in accuracy by .35 (i.e., 1.75 yards) while the CBI decreased in accuracy by .74 (i.e., 3.7 yards). An

independent groups t-test was conducted to determine whether a statistically significant difference existed between the two treatment groups. There was no statistically significant, $t(13)=-2.04$, $p=.06$, effect size=.27 difference, in accuracy gained between beginning golfers receiving computer-based instruction using the "Fundamentals of a Model Swing" software and beginning golfers receiving teacher-directed instruction.

Table 2

Accuracy Scores for Beginning Golfers (n=15)

	Teacher-directed		Computer-based	
	(n=8)		(n=7)	
	Mean	SD	Mean	SD
Pretest	3.55	.94	2.55	1.07
Posttest	3.20	.78	3.29	1.18
Distance Gained	.35	.89	-.74	1.17

Research Question Three

Do intermediate golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater distance gains at the end of a 5-week training session than intermediate golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

The pretest, posttest, and gain score mean distances obtained by the intermediate golfers in the TDI and CBI groups are presented in Table 3. The TDI group improved in distance by 5.39 yards while the CBI improved in distance by 2.49 yards.

An independent groups t-test was conducted to determine whether a statistically significant difference existed between the two treatment groups. There was no statistically significant, $t(17) = .26$, $p = .80$, effect size = .24 difference, in distance gained between intermediate golfers receiving computer-based instruction using the "Fundamentals of a Model Swing" software and intermediate golfers receiving teacher-directed instruction.

Table 3***Distance Scores for Intermediate Golfers (n=19)***

	Teacher-directed		Computer-based	
	(n=10)		(n=9)	
	Mean	SD	Mean	SD
Pretest	102.86	29.60	117.53	29.54
Posttest	108.25	31.75	120.02	29.00
Distance Gained	5.39	21.23	2.49	26.65

Research Question Four

Do intermediate golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater accuracy gains at the end of a 5-week training session than intermediate golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

The pretest, posttest, and gain score means for accuracy obtained by the intermediate golfers in the TDI and CBI groups are presented in Table 4. The TDI group improved by .37 (i.e., 1.85 yards) while the CBI decreased in accuracy score by .43 (i.e., 3.65 yards).

An independent groups t-test was conducted to determine whether a statistically significant difference existed between the two treatment groups. There was no statistically significant, $t(17) = -1.49$, $p = .16$, effect size = .63 difference, in accuracy gained between intermediate golfers receiving computer-based instruction using the "Fundamentals of a Model Swing" software and intermediate golfers receiving teacher-directed instruction.

Table 4

Accuracy Scores for Intermediate Golfers (n=19)

	Teacher-directed		Computer-based	
	(n=10)		(n=9)	
	Mean	SD	Mean	SD
Pretest	3.53	1.24	3.19	1.16
Posttest	3.16	1.11	3.62	.75
Accuracy Gained	.37	.94	-.43	1.40

CHAPTER 5

DISCUSSION

The purpose of this study was to compare computer-based instruction and teacher-directed instruction on the performance of the full golf swing between beginning and intermediate golf students. The investigator addressed four research questions to accomplish this task:

1. Do beginning golfers who receive computer-based instruction (CBI) using the "Fundamentals of A Model Swing" software show greater distance gains at the end of a 5-week training session than beginning golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

2. Do beginning golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater accuracy gains at the end of a 5-week training session than beginning golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

3. Do intermediate golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater distance gains at the end of a 5-week training session than intermediate golfers who

receive teacher-directed instruction (TDI), over the same 5-week period?

4. Do intermediate golfers who receive computer-based instruction (CBI) using the "Fundamentals of a Model Swing" software show greater accuracy gains at the end of a 5-week training session than intermediate golfers who receive teacher-directed instruction (TDI), over the same 5-week period?

This chapter will present a summary of the research, discuss the findings for each research question, and make recommendations for further research.

Summary

To determine the statistical significance of computer-based instruction on the full golf swing on beginning and intermediate golf students, the investigator administered the Benson Golf Test (1963) collecting data from the pretest and posttest over a 5-week period. Subjects used in the study were enrolled in PHED golf classes at Middle Tennessee State University.

The investigator analyzed the pretest scores to determine the ability level of both the CBI and TDI groups. The ability level of both groups was not equal at the start

of the study; therefore, distance and accuracy gain scores were calculated by subtracting the pretest from the posttest. These gain scores were used to conduct the independent groups t-test for both groups. Approximately 10% of pretest trials for both groups were "no-scores" due to the students' failure to make contact with the ball. Only 3% of posttest trials for both groups were no-scores. The students improved from pretest to posttest regarding ball contact.

The practice log turned in by the students on the posttest date revealed that only one student in the TDI beginning group had additional practice trials while the intermediate group had two students. The CBI group had one student from the beginning group and three students from the intermediate group who hit additional balls during the study. The investigator concluded that these trials did not significantly affect the results of the study.

The first research question targeted beginning golf students and compared distance gain scores of the CBI and TDI groups. The TDI group gained .29 yards while the CBI group gained 15.53 yards. There was no statistically significant difference ($p \geq .05$) between the two groups on

distance gain scores even though the gains for the computer-based instruction were higher.

The second question addressed the comparison of accuracy gain scores for beginning golfers of both the TDI and CBI groups. The TDI group improved in accuracy by .35 (i.e., 1.75 yards) while the CBI decreased in accuracy by .74 (i.e., 3.7 yards). There was no statistically significant difference ($p \geq .05$) between the two groups on accuracy gain scores. The CBI group actually declined in accuracy from pretest to posttest.

The third question focused on the comparison of gain scores of distance for intermediate golf students for both groups. The TDI group improved in distance by 5.39 yards while the CBI improved in distance by 2.49 yards. There was no statistically significant difference ($p \geq .05$) in distance gain scores between groups even though the TDI group gained more distance.

The fourth question addressed the comparison of accuracy gain scores of intermediate golf students in both groups. The TDI group improved in accuracy by .37 (i.e., 1.85 yards) while the CBI decreased in accuracy score by .43 (i.e., 3.65 yards). There was no statistically significant difference ($p \geq .05$) in accuracy gain scores

between groups. The CBI group once again declined on accuracy from pretest to posttest.

Discussion

The beginning golfers in the TDI group had a higher mean distance pretest score than the CBI group. Although the distance gain score for the CBI group was much higher than the TDI group, both groups had comparable mean posttest scores (TDI=77.62 and CBI=80.97) for distance. As Schmidt and Lee (1999) suggested, the performance gains become increasingly more difficult to achieve as performance levels increase.

The intermediate golfers in the TDI group had a lower mean pretest distance score than the CBI group. The gain distance score for the TDI group was higher than the CBI group. This result could be due to the higher levels of performance by the TDI group on the pretest, thus making the performance gain more difficult to achieve.

The accuracy gain scores of beginning and intermediate golfers for the CBI group decreased (i.e., less accuracy). The mean posttest distance scores of beginning and intermediate golfers for the CBI group were higher than the TDI group. Graham, Holt/Hale and Parker (1998) suggested

that when developing the golf swing, students should practice for distance before practicing for accuracy. The investigator could prematurely assume that longer distance scores created a decrease in ball accuracy within this study. This conclusion, however, could not be applied to the general population due to the small number of subjects in the study and the lack of statistically significant findings.

Within the delimitations and limitations of the study, it was concluded that there was no statistically significant difference in computer-based instruction and teacher-directed instruction. However, differences existed in gain scores for distance and accuracy for both groups. This non-significant finding is nonetheless important for computer-based instruction in that instructors could utilize effective software packages to aide in teaching particular lessons. Computer-based instruction was not tested without an instructor involved in the lesson; therefore, the conclusion should not be made that a software package could replace the instructor.

From results of this study, the investigator suggests that there are no differences in the use of computer-based instruction and teacher-directed instruction. These

findings are in agreement with those of Adams and Waldrop (1985), Kulik, Bangert, and Williams (1984), Kulik, et al. (1980), and Nelson (1997). Further research is needed to determine the effectiveness of computer-based instruction when teaching the full golf swing. Until statistically significant results exist between TDI methods and CBI methods, educators should continue to search for the effects of technology on learning motor skills.

Recommendations

Based on the findings of this study, the following recommendations are made to guide further research:

1. This investigation should be replicated using a similar population with more subjects involved in each group.
2. A similar study should be conducted comparing the CBI and TDI groups on knowledge, performance, and attitude.
3. A study should be conducted with the investigator grouping the subjects by ability level through a subjective rating scale using a videotaped recording of his or her pretest performance.
4. A similar investigation should be conducted using a different software package.
5. More research should be conducted using a similar study testing other motor skills such as tennis, badminton, baseball, etc.
6. Additional studies should be conducted using the "Fundamental of a Model Swing" software to teach motor skills with the instructional method being computer-assisted instruction (i.e., students working alone) and teacher-directed instruction.

APPENDIX A
Institutional Review Board

Elementary and Special Education Department



P.O. Box 69
Middle Tennessee State University
Murfreesboro, Tennessee 37132
(615) 898-2680

To: Sarah Adams

From: Nancy Bertrand *NB*
IRB Representative

Re: "A Comparison of Computer-based and Teacher-directed
Instruction on Performance of the Full Golf Swing"

Date: June 5, 2000

Your request to change the title of your dissertation from "Effectiveness of Computer-based Instruction on Motor Skill Performance" to "A Comparison of Computer-based and Teacher-directed Instruction on Performance of the Full Golf Swing" has been reviewed and approved. This approval is for one year only.

Best of luck in the successful completion of your research.

cc: Dr. Richard LaLance

A Tennessee Board of Regents Institution

MTSU is an equal opportunity, non-racially identifiable, educational institution that does not discriminate against individuals with disabilities.



APPENDIX B

Student Letter of Permission

111 Murphy Center
Middle Tennessee State University
Murfreesboro, Tennessee 37132
Office: (615) 898-2811 Fax: (615) 898-5020

Dear Students,

February 17, 2000

I am currently enrolled in the doctoral program at Middle Tennessee State University. One of my requirements for graduation is the completion of a dissertation. My dissertation consists of determining the effects of specific teaching methods while teaching the full golf swing. I would like you to be involved in this study.

I need approximately 40-50 college students to help make this study successful. Students who volunteer for the study will be given extra credit points for your participation. Students not involved in the study can gain alternative extra credit points. The full golf swing will be tested two times, a pretest and a posttest. The scores obtained on these test will be kept confidential and destroyed following the study. The pretest and posttest scores will not reflect a grade in this golf class. These tests will strictly be used for my dissertation study.

You may, at any time, withdraw from the study without any need for explanation. Withdrawal from the study will not effect your grade during this golf class.

The study is scheduled to begin on Tuesday, February 22nd and continue until Thursday, March 23rd. If you are interested in participating in this study, please fill out the attached consent form. Any questions or concerns regarding this study can be directly addressed to me at home xxx-xxx-xxxx or by email phed0051@mtsu.edu. Thank you for your interest and consideration.

Sincerely,

Sarah J. Adams
Doctoral Candidate
Middle Tennessee State University

APPENDIX C
Consent Form

Group A ____ Group B ____ <small>Official Use Only</small>
--

Consent Form

Personal Information

Name: _____ Nickname: _____

Address: _____
(Street) (City) (State) (Zip)

Phone: _____ E-mail: _____

Golf Experience

(Please answer the following questions)

Do you have your own golf clubs? Yes ____ No ____

Have you ever taken golf lessons prior to this class? Yes ____ No ____

How much golf have you played? Never played ____
 Never played but hit at driving range ____
 Played 5 times or less ____
 Played 6 times or more ____
 Play often ____

Signature of Permission

I _____ agree to participate in the study. I have been or will be informed as to the nature of the study, that my personal information and scores will be kept confidential, except to be used in association with this test, and will not be revealed without my permission. Finally, I will be given the opportunity to withdraw from the study at any time during the testing period without risk of affecting my grade in beginning golf class.

 (Signature)

 (Date)

APPENDIX D

Permission to Use

Copyrighted Material



Health, Physical Education, Recreation, and Safety

111 Murphy Center
Middle Tennessee State University
Murfreesboro, Tennessee 37132
Office: (615) 898-2811 Fax: (615) 898-5020

January 13, 2000

Dr. Ralph Mann
Compusport International, L.L.C.
P.O. Box 93718
Las Vegas, NV 89193

Dear Dr. Mann:

The purpose of this letter is to request permission to use the "Fundamentals of a Model Swing" (FOMS) software published by CompuSport International in 1999.

I am a doctoral student at Middle Tennessee State University with an emphasis in Physical Education. The topic of my dissertation is "Utilizing Technology to Enhance Performance of the Golf Swing." My research design consists of a control group (teacher-directed instruction) and a treatment group (computer-based instruction). I would like to use the "Fundamentals of a Model Swing" software in the treatment group for instructional purposes.

The subjects selected for the study are male and female students from MTSU enrolled in beginning golf classes. Each group will receive instruction at the beginning of class with practice sessions following. Students will perform the full golf swing using a 5-iron, and data collection will continue for six weeks. Other skills will be taught during the class, but only the full swing will be tested for the study. As I have indicated, the software is a very important tool in the study.

It is understood that use of this software is limited to this dissertation, and this permission does not extend into any other use. In addition, this permission does not extend to the use of any of the material in FOMS in any written, graphical, video, audio, or any other presentation form without the expressed, written permission of CompuSport International. It is also agreed that credit will be given to CompuSport for the use of this program, with the proper name and copyright notices attached. CompuSport will be supplied with a final copy of the dissertation for its records.

Please confirm your approval by signing the attached copy of this letter and mailing it to me in the enclosed envelope. Thank you for your consideration.

Sincerely,

Sarah J. Adams

Sarah J. Adams
Doctoral Candidate

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APPENDIX E

Fundamentals of a Model Swing - Software

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Chapter Layout

Fundamentals Of A Model Swing

Chapter 1

Introduction

- **Chapter 1 - Preface**

- **What You Can Learn From The Pro**

- Page 1 - Meet The Pro
- Page 2 - Learn From The Pro
- Page 3 - Watch The Pro
- Page 4 - What 20 Years Of Research Reveals
- Page 5 - Olympic Medalist Creates The Pro
- Page 6 - The Best Swings In The World
- Page 7 - Information From A Two Second Swing
- Page 8 - How To Learn From The Pro

- **The Best Teachers In The Game**

- Page 9 - Learn The Pro From The Masters
- Page 10 - The Second Generation
- Page 11 - Use Your Subconscious Mind

Fundamentals Of A Model Swing Chapter 2

Introduction

• Chapter 2 - Preparation

- **A Primer On The Teaching Approach**
 - Page 1 - The Research Effort
 - Page 2 - The Pro
 - Page 3 - The Pro Plus
 - Page 4 - The Pro Overlay

- **Getting The Most From The Program**
 - Page 5 - What's Inside
 - Page 6 - Using The Program, Part I
 - Page 7 - Using The Program, Part II

- **Swing Aids**
 - Page 8 - The Teaching Shaft
 - Page 9 - The Metronome
 - Page 10 - The Weighted Club
 - Page 11 - The Setup Template
 - Page 12 - The Heavy Ball
 - Page 13 - Video: For The Serious Student

- **Presenting The Information**
 - Page 14 - Golf Jargon
 - Page 15 - Ground References
 - Page 16 - Paths
 - Page 17 - Gender
 - Page 18 - Handedness
 - Page 19 - Beginning Your Journey

Fundamentals Of A Model Swing

Chapter 3

Instruction

• Chapter 3 - Setup

○ Where The Pro Can Help The Most

- Page 1 - The Neglected Motion
- Page 2 - A Revealing Beginning
- Page 3 - What You Set Is What You Get
- Page 4 - Setup First - Swing Later

○ The Pro Setup

- Page 5 - Beginning The Journey
- Page 6 - Where To Place The Ball
- Page 7 - An Easy Placement
- Page 8 - A Solid Base Of Support
- Page 9 - The Secret Of The Knees
- Page 10 - Flex The Knees
- Page 11 - How Your Trunk Aligns
- Page 12 - Rounded Shoulders
- Page 13 - Important Tasks Of The Shoulders
- Page 14 - Open Your Shoulders (Slightly)
- Page 15 - Where Your Arms Come In
- Page 16 - Left Arm Visible
- Page 17 - Club Alignment: Part I
- Page 18 - Club Alignment: Part II
- Page 19 - Body Balance: The Final Key
- Page 20 - A Special K
- Page 21 - The Not So Hidden Agenda
- Page 22 - Consistency Is The Key
- Page 23 - The Setup Drills

○ Common Setup Problems

- Page 24 - Bad Ball Position
 - Drill - The Setup Drill
 - Drill - The Rest Of The Clubs Drill
- Page 25 - Disappointing Band-Aid
- Page 26 - Feet Spread, Ball Back--Ugh
 - Drill - The Setup Drill
 - Drill - The Rest Of The Clubs Drill

**Fundamentals Of A Model Swing
Chapter 3 (Cont.)**

- Page 27 - Other Common Errors: Side View
 - Drill - The Setup Drill
 - Drill - The Rest Of The Clubs Drill
- Page 28 - Don't Close The Stance
 - Drill - The Setup Drill
 - Drill - The Rest Of The Clubs Drill
- Page 29 - Other Common Errors: Back View
 - Drill - The Setup Drill
 - Drill - The Rest Of The Clubs Drill
- **Grooving Your New Setup**
 - Page 30 - Words Of Caution
 - Page 31 - Required: One Month Of Practice
 - Page 32 - Good! Now Move On To The Grip

Fundamentals Of A Model Swing

Chapter 4

Instruction

• Chapter 4 - Grip

○ Hands On For Great Swings

- Page 1 - The Link To Success
- Page 2 - You Can't Force It
- Page 3 - Get A Grip, Then Hold On
- Page 4 - Don't Even Think About It
- Page 5 - Get It Right At Setup
- Page 6 - Bad Advice
- Page 7 - Setup Is Not Impact
- Page 8 - A Grip That Works At Impact

○ The Pro Grip

- Page 9 - Your New Grip
- Page 10 - An Accommodating Grip
- Page 11 - Grip The Club With Your Fingers
- Page 12 - Harry Vardon's Gift
- Page 13 - The "Other" Grips
- Page 14 - The Limits Of Interlocking
- Page 15 - The Grip Drills

○ Common Grip Problems

- Page 16 - The Slicer's Cure
 - Drill - The Grip Drill
 - Drill - The Grip Pressure Drill
- Page 17 - Hooker's Band-Aid
 - Drill - The Grip Drill
 - Drill - The Grip Pressure Drill
- Page 18 - Get It Right Before You Swing

Fundamentals Of A Model Swing Chapter 5

Instruction

• Chapter 5 - Backswing

○ On Track, Smoothly Back

- Page 1 - Not As Slow As You Think
- Page 2 - The Seven Characteristics
- Page 3 - One: The One Piece Takeaway
- Page 4 - Two: The Initial Shift
- Page 5 - Shift The Weight
- Page 6 - Three: The Turn Begins
- Page 7 - Time Your Movements Correctly
- Page 8 - Four: The Disconnection Theory
- Page 9 - Body-Arm Separation
- Page 10 - Five: Check The Clubface
- Page 11 - Six: Delay Your Wrist Cock

○ The Pro Backswing

- Page 12 - Seven: Not So Slow Back
- Page 13 - The Backswing Drills

○ Common Backswing Problems

- Page 14 - To Shift Or Not To Shift
 - Drill - The Bump The Shaft Drill
 - Drill - The Hug The Shaft Drill
- Page 15 - The Bad Connection
 - Drill - The Arms, Shaft, and Clubface
- Page 16 - Bad Wrists: Part 1
 - Drill - The Produce Wrist Cock Drill
- Page 17 - Bad Wrists: Part 2
 - Drill - The Produce Wrist Cock Drill
- Page 18 - Over-The-Top
 - Drill - The Arms, Shaft, and Clubface
 - Drill - The Push The Ball Drill
- Page 19 - Warp Speed Or Never Ending
 - Drill - The Backswing Tempo Drill
- Page 20 - You're Prepared For The Show

Fundamentals Of A Model Swing
Chapter 6

Instruction

• **Chapter 6 - Transition**

○ **The Key To Success**

- Page 1 - The Magic Move
- Page 2 - Meet The Transition

○ **The Pro Transition**

- Page 3 - The Sequence Begins
- Page 4 - And The Club Shall Be Last
- Page 5 - Watch And Learn
- Page 6 - What's The Big Deal
- Page 7 - The Power Move
- Page 8 - A Coil By Any Other Name
- Page 9 - Other Benefits
- Page 10 - Paying Your Dues
- Page 11 - Those 300 Yard Drives
- Page 12 - Swing Like The Pros

○ **Common Transition Problems**

- Page 13 - The Struggle To Greatness
- Page 14 - Why Can't I Do It: Part I
 - Drill - The Setup Drill
 - Drill - The Rest Of The Clubs Drill
- Page 15 - Why Can't I Do It: Part II
 - Drill - The Grip Drill
- Page 16 - Why Can't I Do It: Part III
 - Drill - The Bump The Shaft Drill
 - Drill - The Hug The Shaft Drill
- Page 17 - Why Can't I Do It: Part IV
 - Drill - The Bump, Hug, And Go Drill
 - Drill - The Setup And Go Drill
- Page 18 - Why Can't I Do It: Part V
 - Drill - The Weighted Club Drill
- Page 19 - On To The Top

Fundamentals Of A Model Swing
Chapter 7

Instruction

• **Chapter 7 - Top Of Swing**

- **Position Is Everything**
 - Page 1 - The Check At The Top
 - Page 2 - Self Destruction Is Possible

- **The Pro Top Of The Swing**
 - Page 3 - Introducing The Squat
 - Page 4 - Down Then Up
 - Page 5 - Down The Target Line
 - Page 6 - Get It Close
 - Page 7 - Drop It Under
 - Page 8 - Top Of The Swing Drills

- **Common Top Of The Swing Problems**
 - Page 9 - The Up-To-Down Syndrome
 - Page 10 - You're Dead
 - Page 11 - How To Move Up In The World
 - Drill - The Squat Drill: Part I
 - Drill - The Right Leg Flexion Drill
 - Drill - The Toes Up, Knee Inside Drill
 - Page 12 - The Club Points Toward Success
 - Drill - The Match The Shaft Drill
 - Drill - The Align The Tee Drill
 - Page 13 - No Support
 - Drill - The Bump, Hug And Go Drill
 - Drill - The Step and Go Drill
 - Page 14 - Too Much Turn
 - Drill - The Bump, Hug And Go Drill
 - Drill - The Step and Go Drill
 - Page 15 - Over The Top
 - Drill - The Drop It Under Drill
 - Page 16 - Heading Toward Impact

Fundamentals Of A Model Swing
Chapter 8

Instruction

• **Chapter 8 - Downswing**

○ **For Distance And Accuracy**

- Page 1 - It's Payoff Time
- Page 2 - Can't Have Both
- Page 3 - Sure You Can
- Page 4 - Good Player's Problem
- Page 5 - The Distance View
- Page 6 - The Accuracy View
- Page 7 - Problems In The Downswing
- Page 8 - The Root Of Downswing Problems

○ **The Pro Downswing**

- Page 9 - The Lower Body Lead
- Page 10 - Right Side Dominant
- Page 11 - The Magical Release Angle
- Page 12 - On The Toe
- Page 13 - Prepare For Accuracy
- Page 14 - Flatten The Shaft
- Page 15 - Clearing Out
- Page 16 - The Inside Path
- Page 17 - Just Hold On
- Page 18 - Downswing Drills

○ **Common Downswing Problems**

- Page 19 - From Good To Bad
 - Drill - The Squat Drill: Part II
 - Drill - The Pump And Go Drill
 - Drill - The Sidearm Throw Drill
- Page 20 - Bad From The Back As Well
 - Drill - The Flatten The Shaft Drill
- Page 21 - Weak Right Or Strong Left
 - Drill - The Right Side Only Drill
 - Drill - The Sidearm Throw Drill
- Page 22 - Left Yank Slice
 - Drill - The Flatten The Shaft Drill
 - Drill - The Inside Path Drill
- Page 23 - We've Finally Arrived

Fundamentals Of A Model Swing

Chapter 9

Instruction

- **Chapter 9 - Impact**

- **The Moment Of Truth**

- Page 1 - The Impact Position
- Page 2 - Not The Whole Story
- Page 3 - Looks Good, Goes Bad
- Page 4 - Peace Of Mind

- **The Pro Impact**

- Page 5 - Anatomy Of Perfection: Part I
- Page 6 - Anatomy Of Perfection: Part II
- Page 7 - Impact Is Not Setup: Part I
- Page 8 - Impact Is Not Setup: Part II
- Page 9 - The Role Of The Left Side
- Page 10 - Out Of The Way
- Page 11 - Needed: One Upright Club
- Page 12 - Impact Drills

- **Common Impact Drills**

- Page 13 - It's The Position, Stupid
 - Drill - The Ball Forward Drill
- Page 14 - Master The Pro Grip
 - Drill - The Grip Drill
 - Drill - The Ball Forward Drill
- Page 15 - Don't Return To The Setup Position
 - Drill - The Ball Forward Drill
 - Drill - The Clear Out Drill
 - Drill - The Slide To The Shaft Drill
- Page 16 - Relax And Enjoy The View

Fundamentals Of A Model Swing
Chapter 10

Instruction

• **Chapter 10 - Follow-Through**

○ **The Measure Of Success**

- Page 1 - Results Don't Lie
- Page 2 - Different, But Still The Same

○ **The Pro Follow-Through**

- Page 3 - On The Left Side
- Page 4 - Getting A "C"
- Page 5 - Old Myths Die Hard
- Page 6 - No Snap Required
- Page 7 - The Pro Finish, Side View
- Page 8 - The Pro Finish, Back View
- Page 9 - Follow-Through Drills

○ **Common Follow-Through Problems**

- Page 10 - No Right Side
 - Drill - The Left Leg Only Drill
 - Drill - The Knees Together Drill
- Page 11 - No Body - All Arms
 - Drill - The Left Leg Only Drill
 - Drill - The Knees Together Drill
 - Drill - The Cover The Shaft Drill
- Page 12 - Chicken Wings
 - Drill - The Left Leg Only Drill
 - Drill - The Cover The Shaft Drill
- Page 13 - Keep Your Head Down
 - Drill - The Follow The Ball Drill
- Page 14 - Slam The Face Shut
 - Drill - The Toe Points Up Drill
 - Drill - The Cover The Shaft Drill
- Page 15 - Right Side Is The Key
- Page 16 - Now Get The Feel

Fundamentals Of A Model Swing
Chapter 11

Instruction

• **Chapter 11 - Timing And Tempo**

- **Let Your Mind Feel The Swing**
 - Page 1 - They Are Not The Same
 - Page 2 - Putting It All Together

- **The Pro Timing**
 - Page 3 - The Order Of The Swing
 - Page 4 - The Initial Shift
 - Page 5 - The First Turn
 - Page 6 - Shifting Into High Gear
 - Page 7 - Turn, Turn, Turn
 - Page 8 - Ok - So Nobody's Perfect

- **The Pro Tempo**
 - Page 9 - Why It Looks So Smooth
 - Page 10 - Relate To The Pro

- **Timing And Tempo Drills**
 - Page 11 - Create A Smooth Order

- **Common Timing Problems**
 - Page 12 - The Right Place At The Wrong Time
 - Drill - The Pick A Part Drill

- **Common Tempo Problems**
 - Page 13 - Don't Lose It
 - Drill - The See It, Do It Drill
 - Drill - The Tempo Master Drill

- **Swing Like A Pro**
 - Page 14 - Developing A Lifetime Swing

APPENDIX F
Lesson Plans
Computer-based Instruction

Computer-Based Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Grip - 1 of 8
Equip: Computer, FOMS software, projector, extension cord, speakers, screen (wall), balls, clubs, and hitting mats

I. Instructional Objectives

- **TLW** demonstrate three grip types.
- **TLW** explain the steps for a proper grip.
- **TLW** execute the proper grip.

II. Set

- Baseball
- Basketball
- Tennis Racquet

III. Instruction - FOMS Software

Input

- Chapter 4 - Page 1 - The link to success
 - Purpose of Grip
 - Allows clubface to square at impact
 - Permits the wrists to hinge properly
- Chapter 4 - Page 2 - You can't force it
 - The hands merge to produce a pivot point
 - Grip should not manipulate the swing
- Chapter 4 - Page 12 - Harry Vardon's gift
 - Overlapping grip - tour players
- Chapter 4 - Page 13 - The "other" grips
 - Limitations when using baseball grip
 - Limits hinging of wrist
 - Prevents wrist from working as a unit
 - Worst Choice - baseball grip
- Chapter 4 - Page 14 - The limits of interlocking
 - Interlocking grip used with some success
 - The shaft rests more in the palm than fingers
 - Use interlocking grip only for small hands
- Chapter 4 - Page 15 - Grip Drills
 - Appendix 2 - Page 1 - Take the big leap
 - Acquire the pro grip
 - Appendix 2 - Page 2 - Get the right size
 - Make sure the grip fits your hands

- Appendix 2 - page 3 - Hands on, great swings
 - Hold club with thumb and forefinger of the right hand
 - Clubface should be directly down the target line
- Appendix 2 - page 4 - Put it in the fingers
 - Open left hand and position it on the target side of the club shaft
 - Place the shaft in middle joint of left index finger, across the fingers, up to the first joint of the little finger
 - 1/4th inch of the club should be visible at the top of club
- Appendix 2 - Page 5 - Get the pad right
 - Close fingers and pad of hand should be on top of the grip
 - Keep the club in the fingers to manipulate the club during the swing
- Appendix 2 - Page 6 - Republican thumb
 - Place the thumb to right of center away from the target, produces a strong grip
- Appendix 2 - Page 7 - Right hand fingers
 - Place the club across the middle joint of right index finger, across the fingers to the first joint of the little finger
- Appendix 2 - Page 8 - Overlap small finger
 - Lift right little finger from shaft and position in between the first two fingers of the left hand
 - Slide right hand down, the two hands fit together
- Appendix 2 - Page 9 - Complete the grip
 - Close fingers of right hand with thumb slightly left of center, toward the target
 - Left thumb fits down lifeline of right hand
- Appendix 2 - Page 10 - The vee checks
 - V formed between thumb and forefinger of right hand points to right shoulder
 - V formed between thumb and forefinger of left hand points to right ear
-

- Appendix 2 - Page 12 - Make the commitment
 - Video of the complete correct grip
- Appendix 2 - Page 13 - Putting on pressure
 - Should be firm with little resistance of wrist and hands

Guided Practice

- Modeling Process
 - "The Pro" does it
 - "The Pro" does it with students' help
 - The students do it with "The Pro's" help
 - The students do it

IV. Closure

- What is the purpose of the grip?
- Why do the fingers need to be on the club rather than the palms?
- What are the three types of grip?

Computer-Based Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Setup - 2 of 8
Equip: Computer, FOMS software, projector, extension cord, speakers, screen (wall), balls, clubs, and hitting mats

I. Instructional Objectives

- **TLW** explain the proper setup in proper order.
- **TLW** execute the proper ball placement.
- **TLW** perform the proper setup.

II. Set

- Fishing boat - proper setup before executing
- Computer hardware and software requires setup
- Cooking requires proper setup
- Traveling requires proper setup
- Previous learning - grip

III. Instruction - FOMS Software

Input

- Chapter 3 - Page 2 - Revealing the beginning
 - Purpose of proper setup
- Chapter 3 - Page 5 - Beginning the journey
 - Must acquire a perfect setup
- Chapter 3 - Page 6 - Where to place the ball
 - Body will make adjustments depending on ball position
 - 32" away from the left toe - produces free flowing swing
- Chapter 3 - Page 7 - An easy placement
 - Left foot out 25 degrees
 - Place ball just inside the left heel
 - Right foot straight ahead
 - Stance width 2" wider than shoulder width
- Chapter 3 - Page 8 - A solid base of support
 - Slightly open stance - helps body rotation
 - Allows "The Pro" to turn toward the target during the downswing, impact, and follow-through
- Chapter 3 - Page 9 - The secret of the knees
 - Right knee shifted slightly to left side

- Allows for balance and control during the swing
- Chapter 3 - Page 10 - Flex the knees
 - Knee flex controls the vertical movement during the swing
 - The knees remain flexed throughout the swing
- Chapter 3 - Page 11 - How the trunk aligns
 - Trunk tilt is slightly away from target
 - Allows for proper body action
- Chapter 3 - Page 12 - Rounded shoulders
 - Shoulders are rounded
 - Allows arms to hang properly at address
- Chapter 3 - Page 13 - Task of the shoulders
 - Right shoulder is well below the left
 - Allows the hands to form the grip
 - Allows the right arm to cross the body enabling ball forward position in the stance
- Chapter 3 - Page 14 - Open your shoulders
 - Slightly open shoulders at setup
 - Allows arms to be placed properly and promotes rotation
- Chapter 3 - Page 15 - Where your arms come in
 - Left arm straight in line with the club
 - Right arm comes across the body and is slightly bent
 - Allows the hands to be forward in line with the ball
- Chapter 3 - Page 16 - Left arm visible
 - Arms fall almost directly down from the shoulders
 - Left arm completely straight - guidance
 - Right arm slightly flexed - power
- Chapter 3 - Page 17 - Club alignment: Part I
 - Club aligned straight up and down
 - Club face points directly down target line with proper setup
- Chapter 3 - Page 18 - Club alignment: Part II
 - Toe of club slightly elevated - upright lie angle
- Chapter 3 - Page 19 - Body balance: The final key
 - Weight evenly distributed between both feet
 - Weight slightly toward the toes

- Chapter 3 - Page 22
 - Preshot routine - be consistent

Guided Practice

- Modeling Process
 - "The Pro" does it
 - "The Pro" does it with students' help
 - The students do it with "The Pro's" help
 - The students do it

Drills

- The Setup Drill
 - Comfortable position away from ball
 - 32" to 34"
 - Position right toe first
 - Put the feet together
 - Position ball in line with the left toe
 - Turn left foot out 25 degrees
 - Step out with right foot about 2" outside shoulder width
- The Rest of the Club Drill
 - 5-iron distance from the ball 24" to 28"
 - 9-iron distance from the ball 18" to 22"
 - 5-iron ball positioned between toes
 - 9-iron ball positioned in line with the right toe
- Practice the pre-shot routine
 - Stand behind the ball down the target line
 - Visualize a line between the ball and target
 - Address the ball
 - Both feet together with club face square to target
 - Position the ball in the stance
 - Open left foot 25 degrees
 - Step out with the right foot about shoulder width
 - Right shoulder should be lower than the left
 - Club shaft and left arm should be in straight line

IV. Closure

- Why is the setup important?
- How can this setup be produced consistently?
- How often should the setup be performed?

Computer-Based Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Backswing - 3 of 8
Equip: Computer, FOMS software, projector, extension cord, speakers, screen (wall), balls, clubs, and hitting mats

I. Instructional Objectives

- **TLW** explain the steps to a correct backswing.
- **TLW** execute the backswing.

II. Set

- Previous learning - grip and setup
- Get a partner and discuss the steps to a proper grip and setup

III. Instruction - FOMS Software

Input

- Chapter 5 - Page 1 - Not as slow as you think
 - Doesn't occur at full speed
 - Slow enough to get body in position
 - Not too slow to manipulate the club
- Chapter 5 - Page 2 - The seven characteristics
 - Introduction
- Chapter 5 - Page 3 - One: The one piece takeaway
 - Arms perform a one piece takeaway
 - Hold the triangle until the hands reach the right pocket
 - Arms and hands must move as a unit at beginning
- Chapter 5 - Page 4 - Two: The initial shift
 - Body shifts away from the target
 - Hips and head shift off the ball
- Chapter 5 - Page 5 - Shift the weight
 - Body shifts to right side early in swing
 - Avoid the reverse pivot
 - Shift must be made with entire body
- Chapter 5 - Page 6 - Three: The turn begins
 - Club shaft is parallel to ground the turning motion begins
 - Right leg serves as an axis
 - No further shift off the ball just turning
 - Hips and head remain stationary

- Chapter 5 - Page 7 - Time your movements
 - First part of backswing dominated by the shift
 - Second part of backswing dominated by the turn
- Chapter 5 - Page 8 - Four: The disconnection
 - Arms move away from the body
 - Arms disconnect from the body
- Chapter 5 - Page 9 - Body-arm separation
 - Keep the hands and club moving down the target line
- Chapter 5 - Page 10 - Five: Check the clubface
 - Clubface slightly closed in backswing
 - Allows the clubface to square at impact
- Chapter 5 - Page 11 - Six: Delay your wrist cock
 - Wrist cock occurs in second part of the backswing
 - During the turn the wrist cock occurs
- Chapter 5 - Page 12 - Seven: Not so slow back
 - Smooth backswing but not slow
- Chapter 5 - Page 13 - The backswing drills
 - Summary

Guided Practice

- Modeling Process
 - "The Pro" does it
 - "The Pro" does it with students' help
 - The students do it with "The Pro's" help
 - The students do it

Drills

- Wrist Cock Drill
 - Lift the club from ground with wrist cocked
 - Lower to ground and repeat
- Wrist Cock and Swing Drill
 - Cock wrist with left arm straight
 - Position club at the top by lifting the arms
 - Swing and finish
- Wall Drill
 - Setup against a wall
 - Step away from the wall approximately 2 feet
 - Execute the backswing
 - Try not to hit the wall

- Thumbs Up Drill
 - Address the ball with an imaginary club
 - Backswing the thumbs are up
 - Follow-through the thumbs are up

IV. Closure

- Why is the backswing important?
- What are some checkpoints to look for when executing the backswing?
- How does the backswing correlate with the grip and setup?

Computer-Based Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Transition - 4 of 8
Equip: Computer, FOMS software, projector, extension cord, speakers, screen (wall), balls, clubs, and hitting mats

I. Instructional Objectives

- TLW** explain the steps to the transition.
- TLW** discuss the purpose of the transition.
- TLW** execute the transition.

II. Set

- Throw a ball and feel the transition
- Incorporate this motion into the golf swing
- Kicking activities

III. Instruction - FOMS Software

Input

- Chapter 6 - Page 3 - The sequence begins
 - Club vertical position in backswing the hips begin to shift and turn toward the target
- Chapter 6 - Page 4 - And the club shall be last
 - Upper body and arms continue to top as the lower body moves toward the target
- Chapter 6 - Page 5 - Watch and learn
 - Demonstration
- Chapter 6 - Page 7 - The power move
 - The power of the transition lies in the hip action
 - Powerful downswing - drive with the hips
- Chapter 6 - Page 8 - A coil by any other name
 - Load the body like a spring
 - Power is created from the coil
- Chapter 6 - Page 9 - Other benefits
 - Purpose is to produce power in the swing
 - Transition properly aligns the body at the top of the swing
- Chapter 6 - Page 10 - Paying your dues
 - Top of the swing the weight begins to move toward the target
- Chapter 6 - Page 11 - Those 300 yard drives
 - Transition allows more power and distance

Guided Practice

- Modeling Process
 - "The Pro" does it
 - "The Pro" does it with students' help
 - The students do it with "The Pro's" help
 - The students do it

Drills

- Throw the Ball Drill
 - Throw a ball to a partner
 - Transferring weight from back foot to front foot to feel the shift
- Step and Go Drill
 - Left foot touches right foot
 - Step forward as the hips move forward
- "The Big Mo" Drill
 - Begin making small swing back and forth
 - Allow natural momentum of hands, arms, and club to turn body
 - Body should work together
 - Increase swing pattern each repetition
 - Eventually execute the full swing

IV. Closure

- When does the transition occur?
- What is the purpose of the transition?
- Can the swing be executed without the transition?

Computer-Based Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Top of Swing - 5 of 8
Equip: Computer, FOMS software, projector, extension cord, speakers, screen (wall), balls, clubs, and hitting mats

I. Instructional Objectives

TLW explain the steps of the downswing.

TLW discuss the purpose of the downswing.

TLW execute the downswing.

II. Set

- Previous Learning - grip, setup, backswing and transition

III. Instruction - FOMS Software

Input

- Chapter 7 - Page 2 - Self destruction is possible
 - Proper setup, backswing, and transition produces proper position at top
- Chapter 7 - Page 3 - Introducing the squat
 - Squat position is controlled by the knee flex
 - Weight moves slightly toward the heels
 - Butt moves back and head down
- Chapter 7 - Page 4 - Down then up
 - Squat allows the body to go up on the downswing
 - Left side moves up and out
 - Right side moves down and through the shot
- Chapter 7 - Page 5 - Down the target line
 - Shaft pointing straight down the target line
- Chapter 7 - Page 6 - Get it close
 - Improper club position at the top will result in poor downswing
- Chapter 7 - Page 7 - Drop it under
 - Path of club head falls and moves through the swing

Guided Practice

- Modeling Process
 - "The Pro" does it
 - "The Pro" does it with students' help
 - The students do it with "The Pro's" help
 - The students do it

Drills

- Match the Shaft Drill - Club
 - Put shaft 6" from toes
 - Perform backswing and imagine club parallel to the teaching shaft
 - Repeat 3 times
- "The Big Mo" Drill
 - Begin making small swing back and forth
 - Allow natural momentum of hands, arms, and club to turn body
 - Body should work together
 - Increase swing pattern each repetition
 - Eventually execute the full swing
- Align the Tee Drill
 - Put tee in butt-end of the club
 - Make sure tee is down the target line
 - Partner stands behind the hitter
- Toes Up, Knee Inside Drill
 - Top of swing must be able to wiggle the right toes
 - Right knee is inside the arch of right foot
 - Repeat twice

IV. Closure

- Where should the club be pointing at the top of the swing?
- What is the purpose of the squat position?

Computer-Based Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Downswing - 6 of 8
Equip: Computer, FOMS software, projector, extension cord, speakers, screen (wall), balls, clubs, and hitting mats

I. Instructional Objectives

TLW explain the steps of the downswing.

TLW discuss the purpose of the downswing.

TLW execute the downswing.

II. Set

- Previous Learning - backswing and transition
- Throw a ball sidearm and shift weight
- Softball bat demonstration

III. Instruction - FOMS Software

Input

- Chapter 8 - Page 8 - The root of downswing
 - Problems in the downswing occur in the grip setup and backswing
- Chapter 8 - Page 9 - The lower body leads
 - The lower body leads through the downswing
- Chapter 8 - Page 10 - Right side dominant
 - Upper body follows by strong right side movement
 - Right side dominates the downswing action
 - Right elbow under the left arm
 - Distance and accuracy dependent on leading with right side
- Chapter 8 - Page 11 - The magical release angle
 - Decrease in angle of club and left arm
 - Not a conscious movement
 - Allows more distance and accuracy
- Chapter 8 - Page 12 - On the toe
 - Shift weight from right side to the left
 - Right toe is in contact with the ground
- Chapter 8 - Page 13 - Prepare for accuracy
 - Maintain knee flexion
 - Hips turn open toward target prior to impact
- Chapter 8 - Page 14 - Flatten the shaft
 - The shaft flattens from backswing to the downswing

- Relax and let the club do the work
- Chapter 8 - Page 15 - Clearing out
 - Prior to impact all weight transferred from left to right side
 - Hips are open to the target
 - Shoulders are closed to the target
- Chapter 8 - Page 16 - The inside path
 - Inside to square swing path is difficult for beginning golfers
- Chapter 8 - Page 17 - Just hold on
 - The clubface is closed as moves toward impact
 - Right arm is under as impact approaches
- Chapter 8 - Page 18 - Downswing Drills
 - Summary

Guided Practice

- Modeling Process
 - "The Pro" does it
 - "The Pro" does it with students' help
 - The students do it with "The Pro's" help
 - The students do it

Drills

- "The Big Mo" Drill
 - Begin making small swing back and forth
 - Allow natural momentum of hands, arms, and club to turn body
 - Body should work together
 - Increase swing pattern each repetition
 - Eventually execute the full swing
- Pump and Go Drill
 - Swing halfway in the backswing
 - Pump the club
 - Get the right side under
 - Shift weight toward target

II. Closure

- What actually happens during the downswing?
- Why is the swing path important?

Computer-Based Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Impact - 7 of 8
Equip: Computer, FOMS software, projector, extension cord, speakers, screen (wall), balls, clubs, and hitting mats

I. Instructional Objectives

TLW demonstrate the impact position.

TLW explain the movements of the body at impact.

II. Set

- Previous Learning - downswing and impact
- Softball bat demonstration

III. Instruction - FOMS Software

Input

- Chapter 9 - Page 3 - Looks good, goes bad
 - Body movements are good but slice occurs
 - Avoid the over-the-top path
- Chapter 9 - Page 5 - Anatomy of perfection
 - Strong right side drive shift the weight to left side at impact
- Chapter 9 - Page 6 - Anatomy of perfection
 - Left side clears and right side moves under toward impact
- Chapter 9 - Page 7 - Impact is not setup
 - The impact position is not the setup position
- Chapter 9 - Page 8 - Impact is not setup
 - The impact position is well ahead of setup position
- Chapter 9 - Page 10 - Out of the way
 - Right side should dominate the downswing
 - Left side should move out of the way for the right side move
- Chapter 9 - Page 11 - Needed: One upright club
 - The club is actually higher at impact than setup
 - The toe of the club should be slightly raised at setup to adjust for this movement
- Chapter 9 - Page 12 - Impact Drills
 - Summary

Guided Practice

- Modeling Process
 - "The Pro" does it
 - "The Pro" does it with students' help
 - The students do it with "The Pro's" help
 - The students do it

Drills

- Wrist Cock and Swing Drill
 - Cock wrist with left arm straight
 - Position club at the top by lifting the arms
 - Swing and finish
- Wall Drill
 - Setup against a wall
 - Step away from the wall approximately 2 feet
 - Execute the backswing
 - Try not to hit the wall
- "The Big Mo" Drill
 - Begin making small swing back and forth
 - Allow natural momentum of hands, arms, and club to turn body
 - Body should work together
 - Increase swing pattern each repetition
 - Eventually execute the full swing
- Ball Forward Drill
 - Shift the weight forward with the hands in front of the ball
 - Half backswing and stop just before hitting the ball
 - Repeat twice before hitting

IV. Closure

- What actually happens during impact?
- In what direction should the clubface be pointing at impact?
- Review

Computer-Based Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Follow-through - 8 of 8
Equip: Computer, FOMS software, projector, extension cord, speakers, screen (wall), balls, clubs, and hitting mats

I. Instructional Objectives

TLW explain the movements of the body during the follow-through.

TLW discuss the purposes of the follow-through.

TLW execute the follow-through.

II. Set

- Softball swing follow-through, basketball free throw follow-through, tennis forehand follow-through, soccer kick follow-through
- Previous Learning - all parts of the swing

III. Instruction - FOMS Software

Input

- Chapter 10 - Page 3 - On the left side
 - Weight on the right side
 - Slide the right foot forward
- Chapter 10 - Page 4 - Getting a "C"
 - Right shoulder, elbow and wrist in front of the left side
 - Produces a reverse "C" during follow-through
- Chapter 10 - Page 5 - Old myths die hard
 - Keep the arms away from the body
 - Allow the head to flow through the shot
 - Do not keep the head down due to restrictions in the shoulders
- Chapter 10 - Page 6 - No snap required
 - Do not roll the arms, wrists, or club during the follow-through
 - Allow the arms to flow through the swing
- Chapter 10 - Page 7 - The pro finish, side view
 - All the weight is on left side
 - Balanced position
- Chapter 10 - Page 8 - The pro finish, back view
 - Body should be facing the target
 - Controlled position and balanced

- Chapter 10 - Page 9 - Follow-through drills
 - Summary

Guided Practice

- Modeling Process
 - "The Pro" does it
 - "The Pro" does it with students' help
 - The students do it with "The Pro's" help
 - The students do it

Drills

- Follow the Ball Drill
 - Follow the ball off the tee
 - The head follows the flight of the ball
- Left Leg Only Drill
 - Hit ball regularly then begin lifting the right leg off the ground
 - Lower body entirely in front of ball
 - Repeat until comfortable
- Toe Points Up Drill
 - Stop the swing after impact
 - Toe of club should be pointing to the sky
 - Repeat 4 times
- Knees Together Drill
 - Right knee actually comes in contact with left knee during follow-through
 - Take a full swing
 - Freeze the finish
 - Knees should be in contact
 - Repeat 5 times

IV. Closure

- What actually happens during the follow-through?
- Why is the follow-through important?
- Review

APPENDIX G

Lesson Plans

Teacher-directed Instruction

Teacher-Directed Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Grip - 1 of 8
Equip: Balls, clubs, and hitting mats

I. Instructional Objectives

- TLW** demonstrate three grip types.
- TLW** explain the steps for a proper grip.
- TLW** execute the proper grip.

II. Set

- Baseball bat - grip
- Basketball - grip when shooting
- Tennis Racquet - forehand grip

III. Instruction

Input

- Purpose of grip
 - Allows clubface to square at impact
 - Permits the wrists to hinge properly
- Pivot point
 - The hands merge to produce a pivot point
 - Grip should not manipulate the swing
- Overlapping grip - tour players
- Baseball grip
 - Limitations when using baseball grip
 - Limits hinging of wrist
 - Prevents wrist from working as a unit
 - Worst Choice - baseball grip
- Interlocking grip
 - Interlocking grip used with some success
 - The shaft rests more in the palm than fingers
 - Use interlocking grip only for small hands
- Grip size
 - Make sure the grip fits your hands
- Position the club
 - Hold club with thumb and forefinger of the right hand
 - Clubface should be directly down the target line

- Left hand
 - Open left hand and position it on the target side of the club shaft
 - Place the shaft in middle joint of left index finger, across the fingers, up to the first joint of the little finger
 - 1/4th inch of the club should be visible at the top of club
- Wrap the left hand
 - Close fingers and pad of hand
 - Should be on top of the grip
 - Keep the club in the fingers to manipulate the club during the swing
- Left thumb
 - Place the thumb to right of center away from the target, produces a strong grip
- Right hand
 - Place the club across the middle joint of right index finger, across the fingers to the first joint of the little finger
- Join the hands
 - Lift right little finger from shaft and position in between the first two fingers of the left hand
 - Slide right hand down, the two hands fit together
- Finish the right hand
 - Close fingers of right hand with thumb slightly left of center, toward the target
 - Left thumb fits down lifeline of right hand
- The vee
 - V formed between thumb and forefinger of right hand points to right shoulder
 - V formed between thumb and forefinger of left hand points to right ear
- Grip pressure
 - Should be firm with little resistance of wrist and hands

Guided Practice

- Modeling Process
 - The teacher does it
 - The teacher does it with students' help
 - The students do it with the teacher's help
 - The students do it

IV. Closure

- What is the purpose of the grip?
- Why do the fingers need to be on the club rather than the palms?
- What are the three types of grip?

Teacher-Directed Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Setup - 2 of 8
Equip: Balls, clubs, and hitting mats

I. Instructional Objectives

TLW explain the proper setup in proper order.

TLW execute the proper ball placement.

TLW perform the proper setup.

II. Set

- Fishing boat proper setup before executing
- Computer hardware and software requires setup
- Cooking requires proper setup
- Traveling requires proper setup
- Previous learning - grip

III. Instruction

Input

- Purpose of proper setup
 - Must acquire a perfect setup
 - Body will make adjustments depending on ball position
 - 32" away from the left toe - produces free flowing swing
- Setup - Feet
 - Left foot out 25 degrees
 - Place ball just inside the left heel
 - Right foot straight ahead
 - Stance width 2" wider than shoulder width
- Stance
 - Slightly open stance - helps body rotation
 - Allows the pro to turn toward the target during the downswing, impact, and follow-through
- Right knee
 - Right knee shifted slightly to left side
 - Allows for balance and control during the swing
- Flex knees
 - Knee flex controls the vertical movement during the swing
 - The knees remain flexed throughout the swing

- Trunk tilt
 - Trunk tilt is slightly away from target
 - Allows for proper body action
- Shoulders
 - Shoulders are rounded
 - Allows arms to hang properly at address
 - Right shoulder is well below the left
 - Allows the hands to form the grip
 - Allows the right arm to cross the body enabling ball forward position in the stance
 - Slightly open shoulders at setup
 - Allows arms to be placed properly and promotes rotation
- Arms
 - Left arm straight in line with the club
 - Right arm comes across the body and is slightly bent
 - Allows the hands to be forward in line with the ball
 - Arms fall almost directly down from the shoulders
 - Left arm completely straight - guidance
 - Right arm slightly flexed - power
- Club alignment
 - Club aligned straight up and down
 - Club face points directly down target line with proper setup
 - Toe of club slightly elevated - upright lie angle
- Weight
 - Weight evenly distributed between both feet
 - Weight slightly toward the toes
- Preshot routine - be consistent

Guided Practice

- Modeling Process
 - The teacher does it
 - The teacher does it with students' help
 - The students do it with the teacher's help
 - The students do it

Drills

- The Setup Drill
 - Comfortable position away from ball
 - 32" to 34"
 - Position right toe first

- Put the feet together
- Position ball in line with the left toe
- Turn left foot out 25 degrees
- Step out with right foot about 2" outside shoulder width
- The Rest of the Club Drill
 - 5-iron distance from the ball 24" to 28"
 - 9-iron distance from the ball 18" to 22"
 - 5-iron ball positioned between toes
 - 9-iron ball positioned in line with the right toe
- Practice the pre-shot routine
 - Stand behind the ball down the target line
 - Visualize a line between the ball and target
 - Address the ball
 - Both feet together with club face square to target
 - Position the ball in the stance
 - Open left foot 25 degrees
 - Step out with the right foot about shoulder width
 - Right shoulder should be lower than the left
 - Club shaft and left arm should be in straight line

IV. Closure

- Why is the setup important?
- How can this setup be produced consistently?
- How often should the setup be performed?

Teacher-Directed Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Backswing - 3 of 8
Equip: Balls, clubs, and hitting mats

I. Instructional Objectives

TLW explain the steps to a correct backswing.
TLW execute the backswing.

II. Set

- Previous learning - grip and setup
- Get a partner and discuss the steps to a proper grip and setup

III. Instruction

Input

- Position the body - speed
 - Doesn't occur at full speed
 - Slow enough to get body in position
 - Not too slow to manipulate the club
- The one piece takeaway
 - Arms perform a one piece takeaway
 - Hold the triangle until the hands reach the right pocket
 - Arms and hands must move as a unit at beginning
- The initial shift
 - Body shifts away from the target
 - Hips and head shift off the ball
 - Body shifts to right side early in swing
 - Avoid the reverse pivot
 - Shift must be made with entire body
- The turn begins
 - Club shaft is parallel to ground the turning motion begins
 - Right leg serves as an axis
 - No further shift off the ball just turning
 - Hips and head remain stationary
- Time the movements
 - First part of backswing dominated by the shift
 - Second part of backswing dominated by the turn

- Arms
 - Arms move away from the body
 - Arms disconnect from the body
 - Keep the hands and club moving down the target line
- Check the clubface
 - Clubface slightly closed in backswing
 - Allows the clubface to square at impact
- Delay your wrist cock
 - Wrist cock occurs in second part of the backswing
 - During the turn the wrist cock occurs
 - Smooth backswing but not slow

Guided Practice

- Modeling Process
 - The teacher does it
 - The teacher does it with students' help
 - The students do it with the teacher's help
 - The students do it

Drills

- Wrist Cock Drill
 - Lift the club from ground with wrist cocked
 - Lower to ground and repeat
- Wrist Cock and Swing Drill
 - Cock wrist with left arm straight
 - Position club at the top by lifting the arms
 - Swing and finish
- Wall Drill
 - Setup against a wall
 - Step away from the wall approximately 2 feet
 - Execute the backswing
 - Try not to hit the wall
- Thumbs Up Drill
 - Address the ball with an imaginary club
 - Backswing the thumbs are up
 - Follow-through the thumbs are up

IV. Closure

- Why is the backswing important?
- What are some checkpoints to look for when executing the backswing?
- How does the backswing correlate with the grip and setup?

Teacher-Directed Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Transition - 4 of 8
Equip: Balls, clubs, and hitting mats

I. Instructional Objectives

- TLW** explain the steps to the transition.
- TLW** discuss the purpose of the transition.
- TLW** execute the transition.

II. Set

- Throw a ball and feel the transition
- Incorporate this motion into the golf swing
- Kicking activities

III. Instruction

Input

- Top of swing
 - Club vertical position in backswing the hips begin to shift and turn toward the target
- Club follows the body
 - Upper body and arms continue to top as the lower body moves toward the target
- Hip action
 - The power of the transition lies in the hip action
 - Powerful downswing - drive with the hips
- Coil of the body
 - Load the body like a spring
 - Power is created from the coil
 - Purpose is to produce power in the swing
 - Transition properly aligns the body at the top of the swing
 - Top of the swing the weight begins to move toward the target
 - Transition allows more power and distance

Guided Practice

- Modeling Process
 - The teacher does it
 - The teacher does it with students' help
 - The students do it with the teacher's help
 - The students do it

Drills

- Throw the Ball Drill
 - Throw a ball to a partner
 - Transferring weight from back foot to front foot to feel the shift
- Step and Go Drill
 - Left foot touches right foot
 - Step forward as the hips move forward
- "The Big Mo" Drill
 - Begin making small swing back and forth
 - Allow natural momentum of hands, arms, and club to turn body
 - Body should work together
 - Increase swing pattern each repetition
 - Eventually execute the full swing

IV. Closure

- When does the transition occur?
- What is the purpose of the transition?
- Can the swing be executed without the transition?

Teacher-Directed Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Top of Swing - 5 of 8
Equip: Balls, clubs, and hitting mats

I. Instructional Objectives

- TLW** explain the steps of the downswing.
- TLW** discuss the purpose of the downswing.
- TLW** execute the downswing.

II. Set

- Previous Learning - backswing and transition

III. Instruction

Input

- Proper sequence
 - Proper setup, backswing, and transition produces proper position at top
- Squat
 - Squat position is controlled by the knee flex
 - Weight moves slightly toward the heels
 - Butt moves back and head down
 - Squat allows the body to go up on the downswing
 - Left side moves up and out
 - Right side moves down and through the shot
- Club Check Point
 - Shaft pointing straight down the target line
 - Improper club position at the top will result in poor downswing
- Drop the club head
 - Path of club head falls and moves through the swing

Guided Practice

- Modeling Process
 - The teacher does it
 - The teacher does it with students' help
 - The students do it with the teacher's help
 - The students do it

Drills

- Match the Shaft Drill - Club
 - Put shaft 6" from toes

- Perform backswing and imagine club parallel to the teaching shaft
- Repeat 3 times
- "The Big Mo" Drill
 - Begin making small swing back and forth
 - Allow natural momentum of hands, arms, and club to turn body
 - Body should work together
 - Increase swing pattern each repetition
 - Eventually execute the full swing
- Align the Tee Drill
 - Put tee in butt-end of the club
 - Make sure tee is down the target line
 - Partner stands behind the hitter
- Toes Up, Knee Inside Drill
 - Top of swing must be able to wiggle the right toes
 - Right knee is inside the arch of right foot
 - Repeat twice

IV. Closure

- Where should the club be pointing at the top of the swing?
- What is the purpose of the squat position?

Teacher-Directed Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Downswing - 6 of 8
Equip: Balls, clubs, and hitting mats

I. Instructional Objectives

- TLW** explain the steps of the downswing.
- TLW** discuss the purpose of the downswing.
- TLW** execute the downswing.

II. Set

- Previous Learning - backswing and transition
- Throw a ball sidearm and shift weight
- Softball bat demonstration

III. Instruction

Input

- Sequence of skills
 - Problems in the downswing occur in the grip setup and backswing
- Lower body
 - The lower body leads through the downswing
- Right side dominant
 - Upper body follows by strong right side movement
 - Right side dominates the downswing action
 - Right elbow under the left arm
 - Distance and accuracy dependent on leading with right side
- Release angle
 - Decrease in angle of club and left arm
 - Not a conscious movement
 - Allows more distance and accuracy
- Weight shift
 - Shift weight from right side to the left
 - Right toe is in contact with the ground
 - Maintain knee flexion
 - Hips turn open toward target prior to impact
- Flatten the shaft
 - The shaft flattens from backswing to the downswing
 - Relax and let the club do the work

- Clearing out
 - Prior to impact all weight transferred to left side
 - Hips are open to the target
 - Shoulders are closed to the target
- The club path
 - Inside to square swing path is difficult for beginning golfers
 - The clubface is closed as moves toward impact
 - Right arm is under as impact approaches

Guided Practice

- Modeling Process
 - The teacher does it
 - The teacher does it with students' help
 - The students do it with the teacher's help
 - The students do it

Drills

- "The Big Mo" Drill
 - Begin making small swing back and forth
 - Allow natural momentum of hands, arms, and club to turn body
 - Body should work together
 - Increase swing pattern each repetition
 - Eventually execute the full swing
- Pump and Go Drill
 - Swing halfway in the backswing
 - Pump the club
 - Get the right side under
 - Shift weight toward target

IV. Closure

- What actually happens during the downswing?
- Why is the swing path important?

Teacher-Directed Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Impact - 7 of 8
Equip: Balls, clubs, and hitting mats

I. Instructional Objectives

TLW demonstrate the impact position.

TLW explain the movements of the body at impact.

II. Set

- Previous Learning - downswing and impact
- Softball bat demonstration

III. Instruction

Input

- Club path
 - Body movements are good but slice occurs
 - Avoid the over-the-top path
- Weight shift
 - Strong drive from right side
 - Shift the weight to left side at impact
 - Left side clears and right side moves under toward impact
- Impact is not setup
 - The impact position is not the setup position
 - The impact position is well ahead of setup position
 - The club is actually higher at impact than setup
- Right side
 - Right side should dominate the downswing
 - Left side should move out of the way for the right side move
- Elevated club at setup
 - The toe of the club should be slightly raised at setup to adjust for this movement

Guided Practice

- Modeling Process
 - The teacher does it
 - The teacher does it with students' help
 - The students do it with the teacher's help
 - The students do it

Drills

- Wrist Cock and Swing Drill
 - Cock wrist with left arm straight
 - Position club at the top by lifting the arms
 - Swing and finish
- Wall Drill
 - Setup against a wall
 - Step away from the wall approximately 2 feet
 - Execute the backswing
 - Try not to hit the wall
- "The Big Mo" Drill
 - Begin making small swing back and forth
 - Allow natural momentum of hands, arms, and club to turn body
 - Body should work together
 - Increase swing pattern each repetition
 - Eventually execute the full swing
- Ball Forward Drill
 - Shift the weight forward with the hands in front of the ball
 - Half backswing and stop just before hitting the ball
 - Repeat twice before hitting

IV. Closure

- What actually happens during impact?
- In what direction should the clubface be pointing at impact?
- Review

Teacher-Directed Instruction

Subject: Beginning Golf
Unit: Full Golf Swing
Lesson: Follow-through - 8 of 8
Equip: Balls, clubs, and hitting mats

I. Instructional Objectives

TLW explain the movements of the body during the follow-through.

TLW discuss the purposes of the follow-through.

TLW execute the follow-through.

II. Set

- Softball swing follow-through, basketball free throw follow-through, tennis forehand follow-through, soccer kick follow-through
- Previous Learning - all parts of the swing

III. Instruction

Input

- Weight
 - Weight on the left side
 - Slide the right foot forward
- Reverse "C"
 - Right shoulder, elbow and wrist in front of the left side
 - Produces a reverse "C" during follow-through
- Follow ball - arms away
 - Keep the arms away from the body
 - Allow the head to flow through the shot
 - Do not keep the head down due to restrictions in the shoulders
- Do not roll wrist
 - Do not roll the arms, wrists, or club during the follow-through
 - Allow the arms to flow through the swing
- Weight on left side
 - All the weight is on left side
 - Balanced position
- Body facing target
 - Body should be facing the target
 - Controlled position and balanced

Guided Practice

- Modeling Process
 - The teacher does it
 - The teacher does it with students' help
 - The students do it with the teacher's help
 - The students do it

Drills

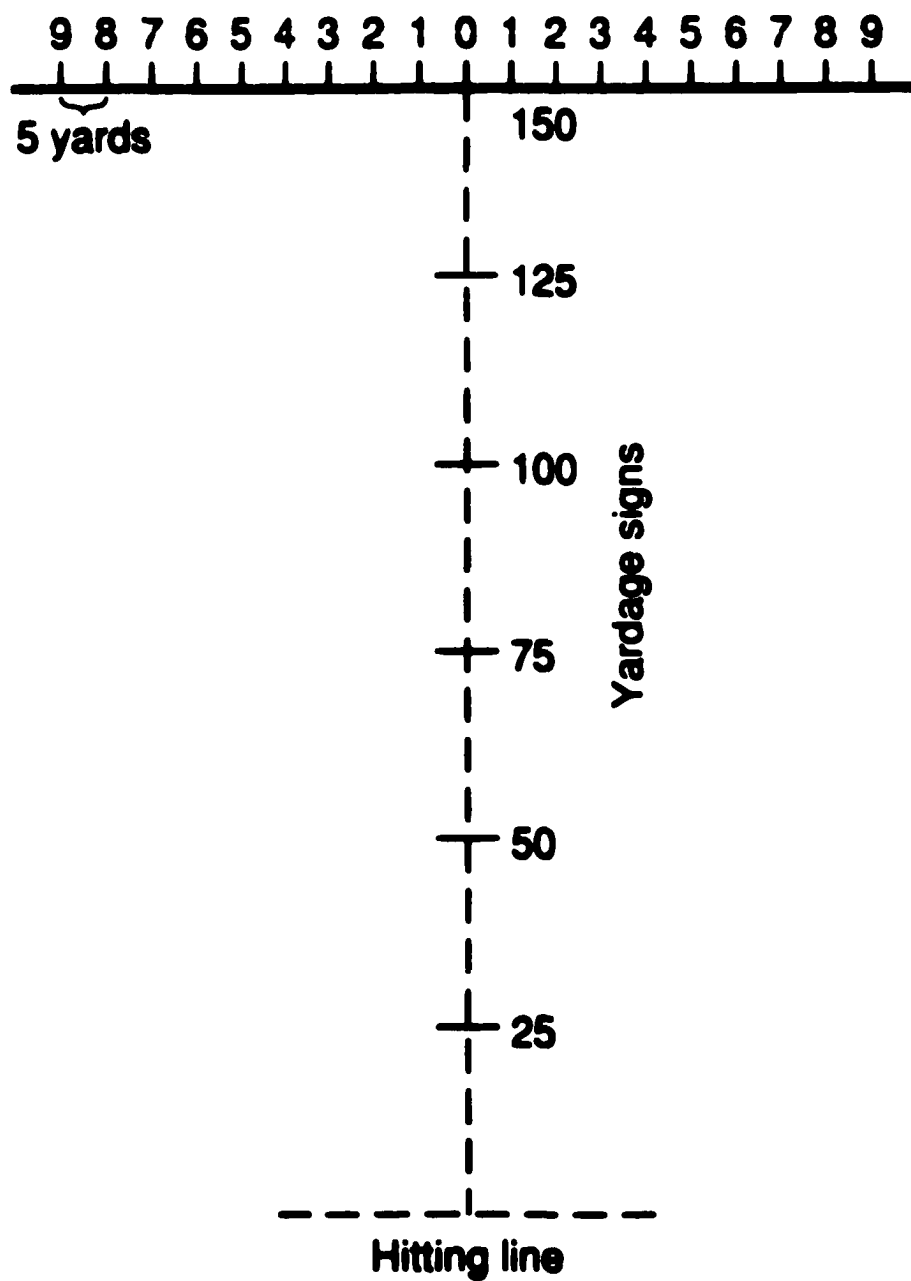
- Follow the Ball Drill
 - Follow the ball off the tee
 - The head follows the flight of the ball
- Left Leg Only Drill
 - Hit ball regularly then begin lifting the right leg off the ground
 - Lower body entirely in front of ball
 - Repeat until comfortable
- Toe Points Up Drill
 - Stop the swing after impact
 - Toe of club should be pointing to the sky
 - Repeat 4 times
- Knees Together Drill
 - Right knee actually comes in contact with left knee during follow-through
 - Take a full swing
 - Freeze the finish
 - Knees should be in contact
 - Repeat 5 times

IV. Closure

- What actually happens during the follow-through?
- Why is the follow-through important?
- Review

APPENDIX H

Benson Golf Test Diagram

Benson Golf Test

APPENDIX I
Score Sheet

Score Sheet

Name: _____ Name: _____ Name: _____

Color: _____ Color: _____ Color: _____

Club: _____ Club: _____ Club: _____

Red																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total

Black																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total

Blue																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total

Green																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total

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